

# PROTEAN<sup>®</sup> Plus Dodeca<sup>™</sup> Cell System

12 High-Resolution, Reproducible Second-Dimension Gels in an Incredible 6 Hours



# PROTEAN Plus Dodeca Cell

## Second-Dimension Gels in only 6 Hours

The PROTEAN Plus Dodeca cell runs up to 12 large-format PAGE gels in just 6 hours. Matching the 12-gel capacity of first-dimension runs in the PROTEAN® i12™ IEF system, the PROTEAN Plus Dodeca cell is designed for high-throughput 2-D applications in a convenient format.

### **Uniform Buffer Temperature for Reproducibility**

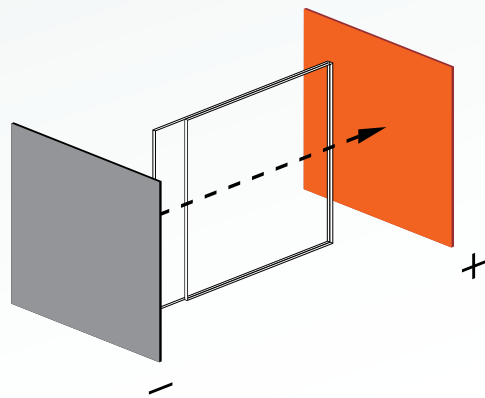
The temperature of the running buffer remains constant ( $\pm 0.5^{\circ}\text{C}$ ) by recirculation of buffer from the top of the tank to the bottom. This mechanism provides identical conditions for all 12 gel locations, maximizing reproducibility and eliminating variables that can cloud results (see Figure 1).

### **Uniform Electrical Field for Straight Horizontal Results**

The PROTEAN Plus plate electrodes create an optimally uniform electrical field, providing straight horizontal run results. Figure 2 demonstrates the uniformity of field, which is critical to reproducibility and accurate protein identification.

### **High Resolution through Efficient Cooling**

Cooling is provided by an external refrigerated circulator. The cooling/recirculation system facilitates efficient heat dissipation for large-format gels, providing high-resolution results in only 6 hours.



Buffer is drawn up through the lid manifold and recirculated to the bottom of the tank for even buffer temperatures — buffer surrounding the gels varies by less than 1°C

90° running orientation facilitates easy assembly and eliminates the possibility of buffer leaks, which can affect run time

Hinged glass plates with integrated spacers guarantee perfect alignment and eliminate potential current leaks. The differential plate height facilitates easy IPG strip or tube gel loading

Accommodates a variety of gel sizes: 20 x 20.5 cm or 25 x 20.5 cm (W x L) and 1.0, 1.5, or 2.0 mm thick

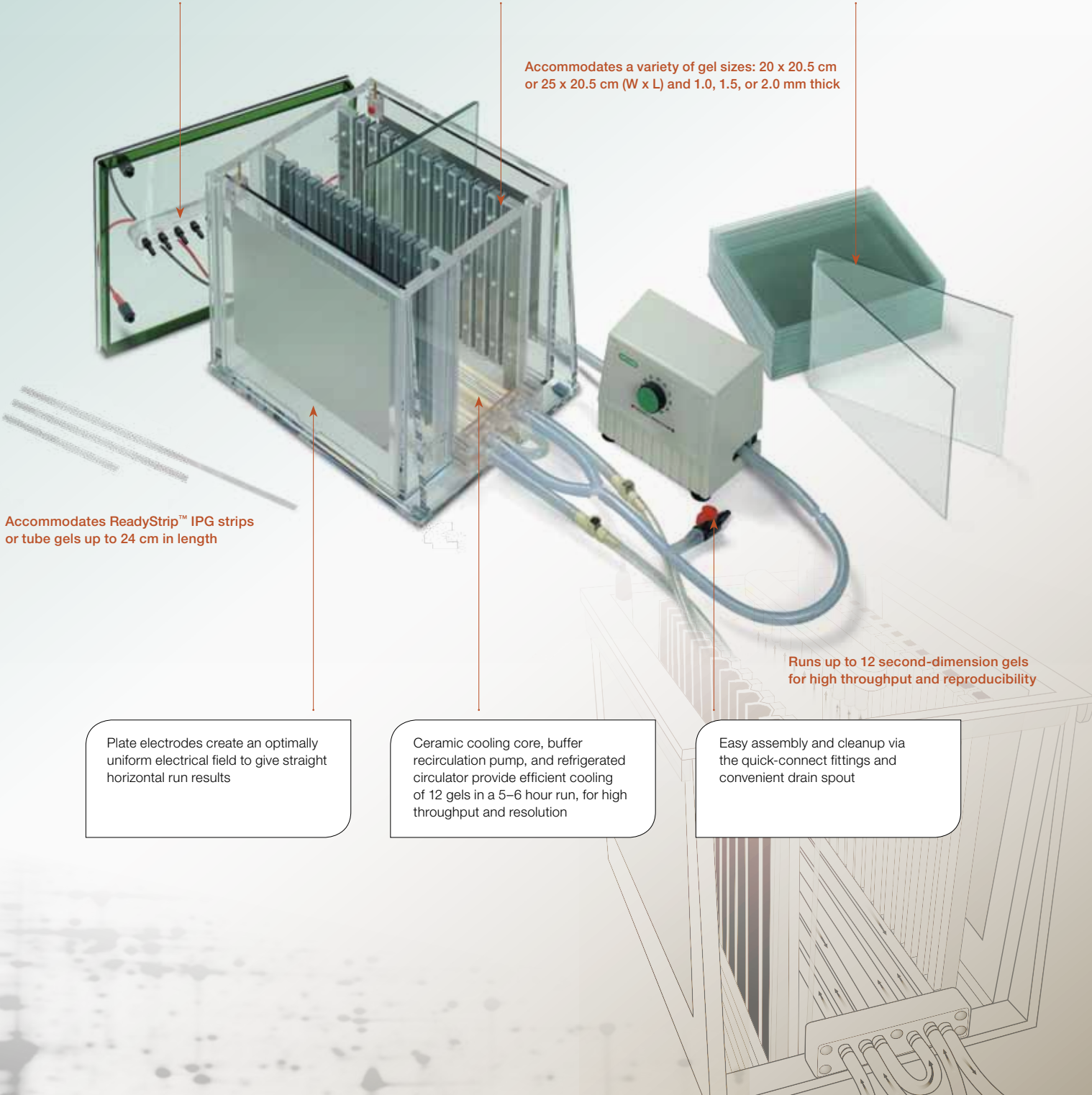
Accommodates ReadyStrip™ IPG strips or tube gels up to 24 cm in length

Runs up to 12 second-dimension gels for high throughput and reproducibility

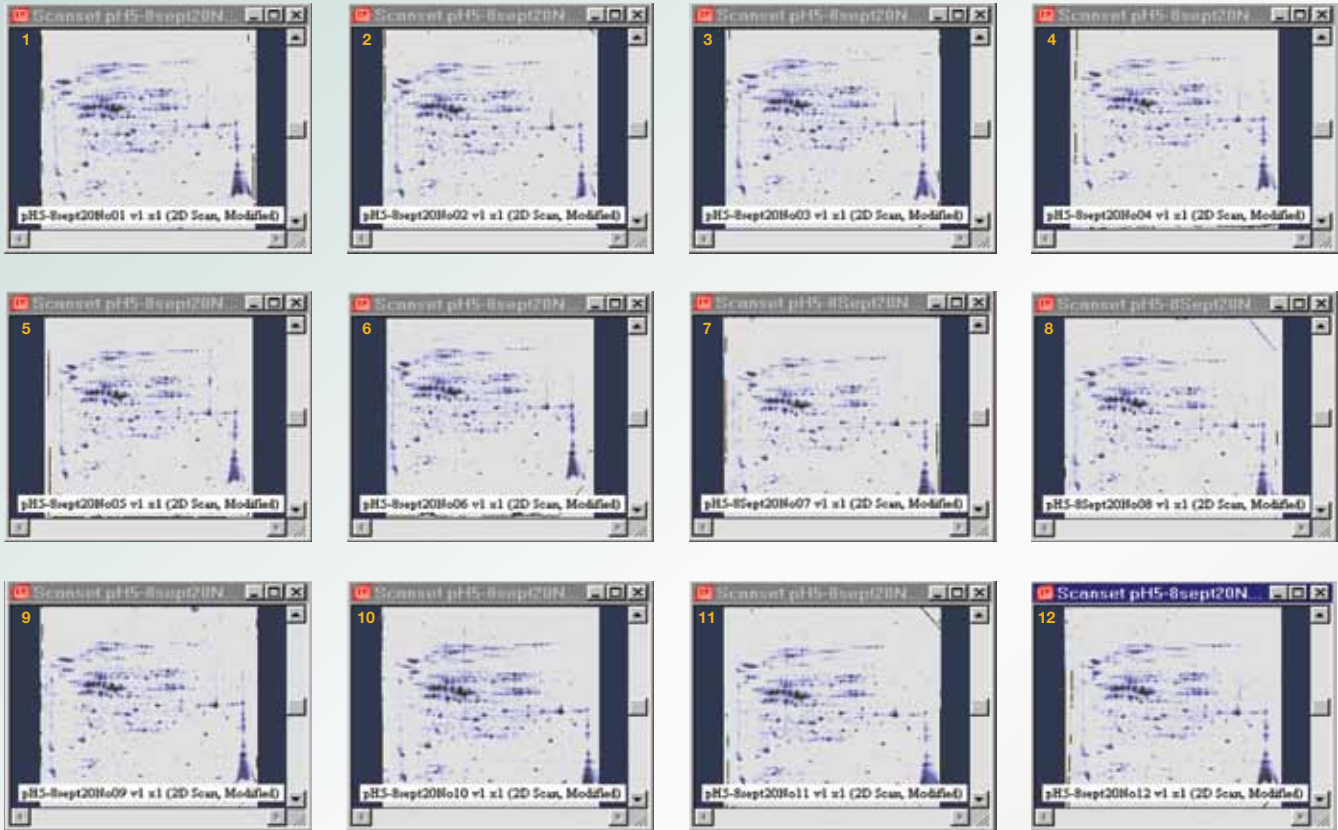
Plate electrodes create an optimally uniform electrical field to give straight horizontal run results

Ceramic cooling core, buffer recirculation pump, and refrigerated circulator provide efficient cooling of 12 gels in a 5–6 hour run, for high throughput and resolution

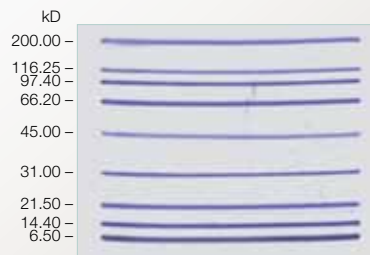
Easy assembly and cleanup via the quick-connect fittings and convenient drain spout



# High Throughput and Great Results from a Simple Package



**Fig. 1. Reproducibility of 2-D PAGE in the PROTEAN Plus Dodeca cell.** First dimension: 300 µg of *E. coli* lysate treated with RNase and DNase in 325 µl of rehydration buffer (0.1% Bio-Lyte® ampholytes) were loaded onto each of the twelve 24 cm ReadyStrip IPG strips pH 5–8. The strips were focused for a total of 92,000 Vh. Second dimension: Twelve 8–16% gels were run at 200 V constant for 6 hr in the PROTEAN Plus Dodeca cell. The reproducibility of the 2-D pattern across all 12 gels demonstrates a uniform buffer temperature throughout the cell.



**Fig. 2. Strict analysis of migration uniformity.** A 25 x 20.5 cm (W x L) 8–16% gel was hand cast. Unstained broad range protein standards were suspended in agarose and layered across the entire length of the gel surface. The protein standards migrated for 6 hr at 200 V in the PROTEAN Plus Dodeca cell. Note the uniformity of migration across the width of the gel.







### **PROTEAN Plus Multi-Casting Chamber**

The chamber allows you to cast up to 12 gels of 1.0, 1.5, or 2.0 mm thickness simultaneously, and holds both the 20 cm and 25 cm wide PROTEAN Plus hinged plates. Acrylic space fillers can be used when fewer than 12 gels are cast, and a leveling bubble ensures level interfaces. Gradient gels are cast through a bottom filling port.



### **Model 495 Gradient Former**

The Model 495 gradient former allows you to pour linear, concave, or convex exponential acrylamide gradients. With a capacity of 100–1,500 ml, the gradient former can cast up to twelve 2.0 mm slab gels in the PROTEAN Plus multi-casting chamber.



### **AnyGel™ Stand**

The AnyGel stand provides vertical stabilization and easy access to virtually any size slab gel cassette. The stand can optimally position gels for loading IPG strips onto the second dimension. It is also useful as a holding rack between gel processing procedures. The single-row format accommodates 1 large-format gel. A 6-row model for high-volume labs accommodates up to 6 large-format gels. A special clamping system secures gels vertically without excess pressure, and the 6-row format features escalating height positions to enhance the view and access to individual gels.



### **Dodeca Stainer**

Dodeca stainer is a high-throughput gel staining device available in two sizes: a small size accommodating up to 24 Criterion™ gels and a large size accommodating up to 12 large-format gels. The Dodeca stainer has the same capacity as the PROTEAN Plus Dodeca cell for second-dimension separation and is compatible with all Bio-Rad protein gel stains. It ensures high-quality and consistent results while eliminating gel breakage from excessive handling.

**PROTEAN Plus Dodeca Specifications**

<b>Number of gels</b>	1–12
<b>Handcast gels</b>	20 x 20.5 cm or 25 x 20.5 cm (W x L) and 1.0, 1.5, or 2.0 mm thick. Cast using PROTEAN Plus hinged spacer plates and the PROTEAN Plus multi-casting chamber
<b>Gel thickness</b>	1.0, 1.5, or 2.0 mm thick
<b>Total buffer volume</b>	22.5 L
<b>Typical running conditions</b>	For 12 handcast gels, 200 V constant for 6–7 hr at ~800 mA (initial)
<b>Cooling</b>	Built-in cooling core, attaches easily to external refrigerated circulator (circulator must be purchased separately; recommended flow rate 10–15 L/min, recommended cooling capacity ≥250 W at 20°C)
<b>Recommended power supply</b>	PowerPac™ HC or PowerPac Universal
<b>Dimensions (W x L x H)</b>	Tank: 34.5 x 39.5 x 34.5 cm; pump: 17.5 x 19.5 x 12 cm
<b>Weight</b>	17.5 kg

**Ordering Information**

Catalog # Description

**PROTEAN Plus Dodeca Cell\***

165-4150	PROTEAN Plus Dodeca Cell, 100/120 V, includes tank and lid, buffer recirculation pump with tubing, manifold extension tubing, instructions
165-4151	PROTEAN Plus Dodeca Cell, 220/240 V
165-4153	Replacement Tubing Kit
165-4154	Replacement Gasket Assembly
165-4155	Replacement Electrode Card, anode
165-4156	Replacement Electrode Card, cathode
165-4157	Replacement Lid
165-4166	Replacement Manifold Extension Tubing

**PowerPac Power Supply**

164-5052	PowerPac HC Power Supply, 100–120/220–240 V
164-5070	PowerPac Universal Power Supply, 100–120/220–240 V

**PROTEAN Plus Multi-Casting Chamber**

165-4160	PROTEAN Plus Multi-Casting Chamber, includes casting chamber, sealing plate, silicone gasket, tapered luer connector, leveling bubble, acrylic blocks, separation sheets, instructions (order hinged spacer plates and combs separately)
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**PROTEAN Plus Hinged Spacer Plates (gel dimensions)**

165-4170	20 x 20.5 cm (W x L), 1.0 mm, 1
165-4171	20 x 20.5 cm (W x L), 1.5 mm, 1
165-4172	20 x 20.5 cm (W x L), 2.0 mm, 1
165-4173	25 x 20.5 cm (W x L), 1.0 mm, 1
165-4174	25 x 20.5 cm (W x L), 1.5 mm, 1
165-4175	25 x 20.5 cm (W x L), 2.0 mm, 1

**PROTEAN Plus Combs**

165-4176	2-D with 1 reference well, 20 cm, 1.0 mm, 1
165-4177	2-D with 1 reference well, 20 cm, 1.5 mm, 1
165-4178	2-D with 1 reference well, 20 cm, 2.0 mm, 1
165-4179	2-D with 1 reference well, 25 cm, 1.0 mm, 1
165-4180	2-D with 1 reference well, 25 cm, 1.5 mm, 1
165-4181	2-D with 1 reference well, 25 cm, 2.0 mm, 1

**Model 495 Gradient Former**

165-4121	Model 495 Gradient Former, 100–1,500 ml, includes body with valve stem and tubing connection kit
165-2005	Exponential Piston, for Model 495 gradient former (required to pour concave or convex exponential acrylamide gradients)
165-2008	Replacement Tubing Connection Kit, includes stopcock, tapered luer coupling, tubing (1/8" ID, 3 ft), and Y-connector

**AnyGel Stand**

165-4131	AnyGel Stand, single row, holds 1 large-format gel cassette
165-5131	AnyGel Stand, 6-row, holds 6 large-format gel cassettes

Catalog # Description

**Protein Standard**

161-0378	Precision Plus Protein™ Standard Plugs
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**Premixed Electrophoresis Buffers and Reagents**

161-0772	10x Tris/Glycine/SDS, 5 L
161-0771	10x Tris/Glycine, 5 L
163-2092	PROTEAN Plus Overlay Agarose

**Products for the First Dimension**

The PROTEAN i12 IEF system and ReadyStrip IPG strips streamline handling and increase your resolving power and reproducibility in the first dimension.

**PROTEAN i12 IEF Cell**

164-6000	Isoelectric focusing system, includes basic unit, electrode assemblies, focusing and rehydration/equilibration trays, forceps, electrode wicks, mineral oil, cleaning accessories, IPG strips and sample/rehydration buffer, USB flash drives, styluses.
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**ReadyStrip IPG Strips\*\***

pH Range	17 cm	18 cm	24 cm
3–10	163-2007	163-2032	163-2042
3–10 NL***	163-2009	163-2033	163-2043
4–7	163-2008	163-2034	163-2044
3–6	163-2010	163-2035	163-2045
5–8	163-2011	163-2036	163-2046
7–10	163-2012	163-2037	163-2047
3.9–5.1	163-2020	163-2038	163-2048
4.7–5.9	163-2021	163-2039	163-2049
5.5–6.7	163-2022	163-2040	163-2050
6.3–8.3	163-2023	163-2041	163-2051

**Software**

170-9630	PDQuest™ Advanced 2-D Analysis Software, version 8.0
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\* Order hinged spacer plates, combs, and multi-casting chamber separately.

\*\* A subset of IPG strip ordering information has been provided. For a complete listing visit our website or request bulletin 2426.

\*\*\* Nonlinear

For more information on 2-D electrophoresis products from Bio-Rad visit us at [www.expressionproteomics.com](http://www.expressionproteomics.com).

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