

Electrophoresis + Blotting + Imaging



V3 Western Workflow™
Visualize. Verify. Validate.



Why choose the **V3** Western Workflow™ from Bio-Rad?



Separate Proteins

Visualize Separation

Transfer Proteins



Speed

Rapid, high-quality separation of proteins in as little as 15 minutes.

Efficient protein transfer in as little as 3 minutes.



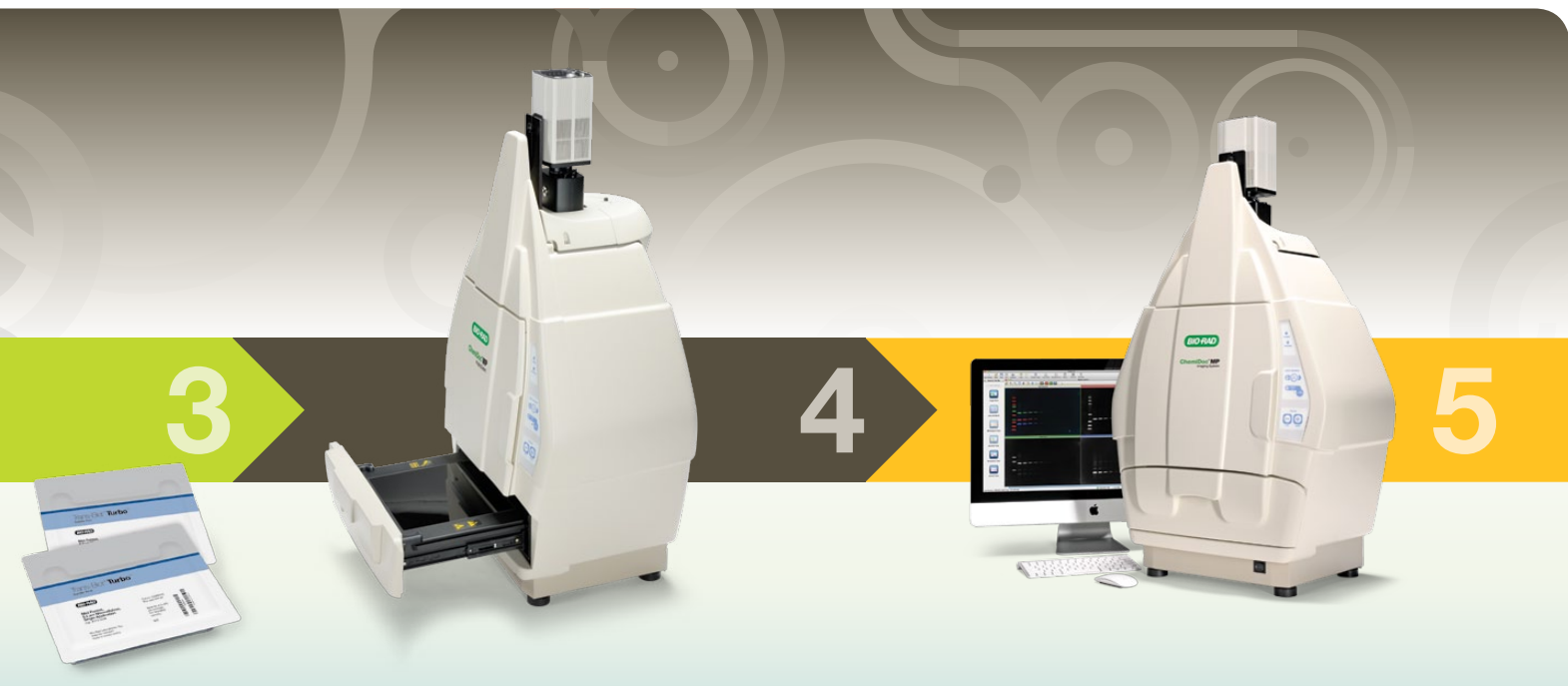
Confidence

Confirmation of protein separation and transfer without staining and destaining provides checkpoints throughout a western blot.



Quantitation

Quantitation and normalization made simple with stain-free technology.



Verify Transfer

Validate Western Blot

V3 Western Workflow

Separate Proteins

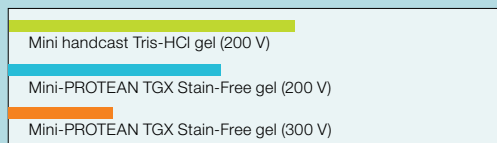
1

Rapidly separate proteins in as little as 15 minutes with Criterion™ and Mini-PROTEAN® TGX Stain-Free™ precast gels.

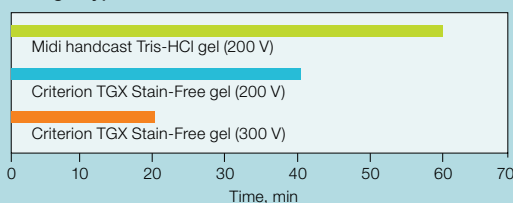
TGX chemistry offers superior protein separation with fast run times, features a one year shelf life, and uses standard Tris-glycine running buffers.

Stain-free technology is a sensitive, time-saving alternative to traditional Coomassie staining and is compatible with western blotting. No staining or destaining is required, offering a streamlined workflow.

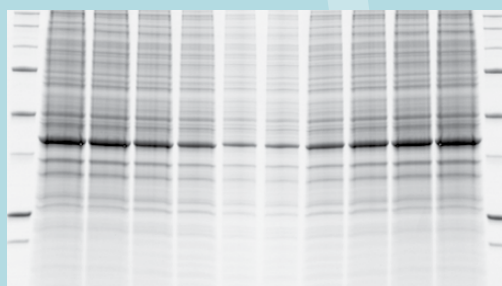
Mini gel typical run times



Midi gel typical run times



Protein separation at 300 V



Protein separation at 200 V

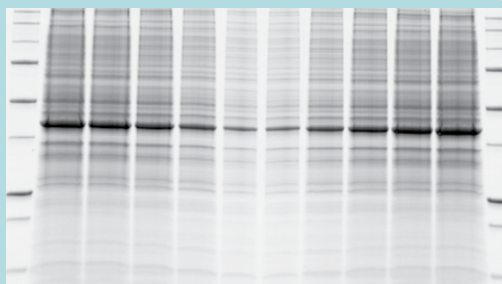
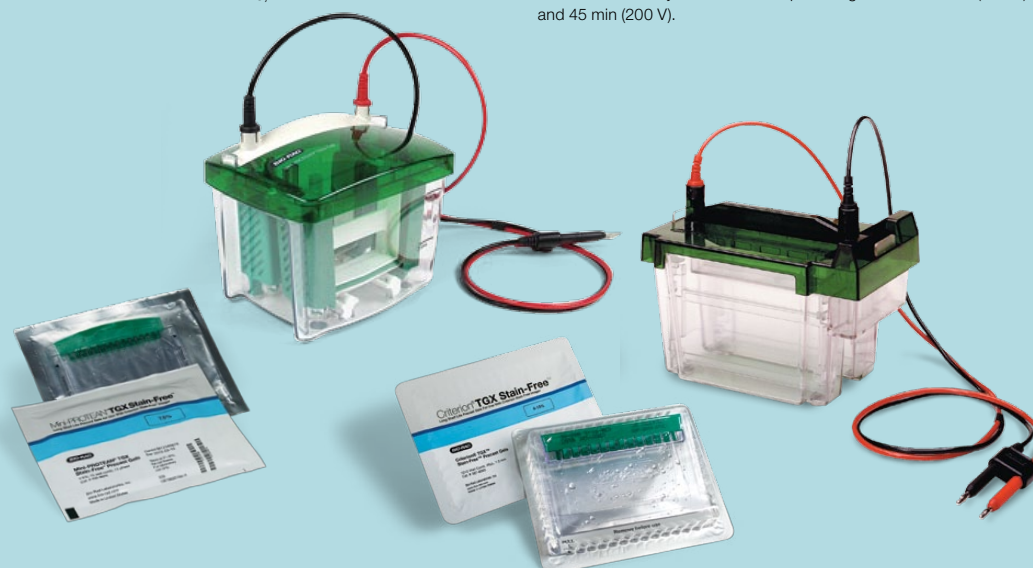


Fig. 1. Protein separation at 300 V or 200 V yields similar results. Criterion™ TGX Any kD Stain-Free™ precast gel run for 30 min (300 V) and 45 min (200 V).



Visualize. Verify. Validate.

Visualize Separation

2

Immediately visualize separation with stain-free technology and the ChemiDoc™ MP imager with one easy step.

Combined with stain-free precast gels, the ChemiDoc MP imaging system allows rapid visualization of electrophoretic separation prior to protein transfer.

Stain-free gel activation and imaging (1 min)



Coomassie-stained gel (overnight staining)



Fig. 2. Results using a stain-free gel are similar to those using a Coomassie-stained gel. Criterion TGX Any kD Stain-Free precast gel run at 200 V for 45 min. Stain-free technology is visualized on the ChemiDoc MP imaging system and compared with a gel stained overnight with Bio-Safe™ Coomassie stain.



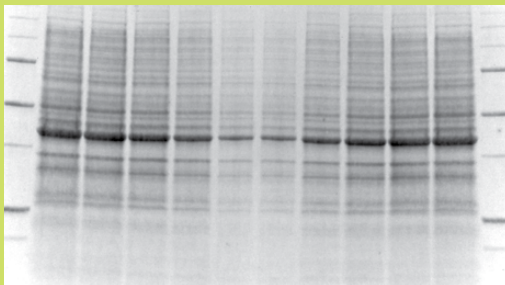
Transfer Proteins

3

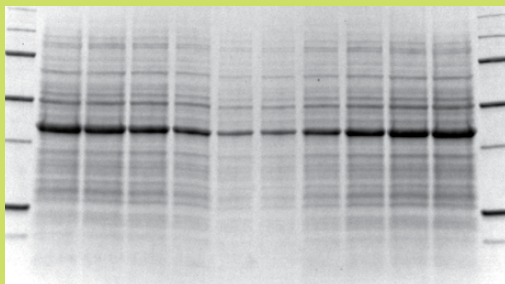
The Trans-Blot® Turbo™ transfer system enables rapid and efficient transfer of proteins across a wide range of molecular weights.

The Trans-Blot Turbo system offers rapid protein transfer efficiency — achieved in as little as 3 minutes — compared to tank blotting.

Trans-Blot Turbo system (7 min)



Semi-dry blotting (30 min)



Tank blotting (60 min)

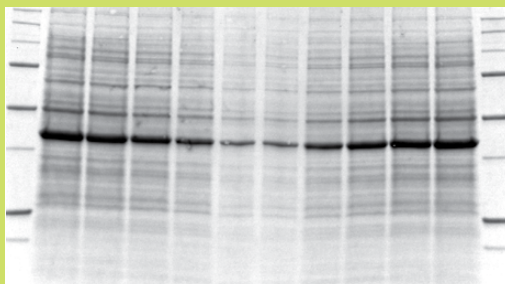


Fig. 3. Transfer efficiencies are comparable between the Trans-Blot Turbo system and tank blotting. Transfers were performed with the Trans-Blot Turbo system (7 min), the Trans-Blot SD semi-dry transfer cell (30 min), and by tank transfer (60 min).

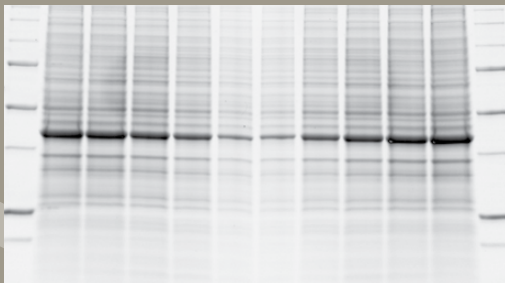
Verify Transfer

4

Verify high-quality transfer using stain-free technology by instantly imaging the membrane on the ChemiDoc MP.

Once stain-free technology is activated during gel imaging, proteins can be visualized on the membrane, allowing instant verification of protein transfer. Ponceau S staining and destaining of the membrane are no longer required.

Stain-free technology



Ponceau S stain

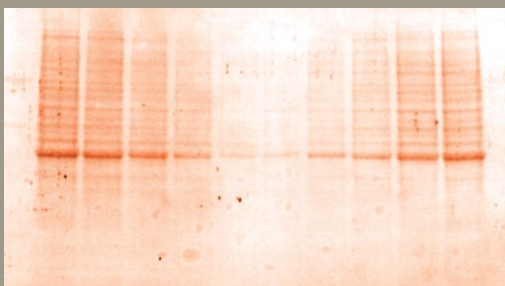


Fig. 4. Stain-free technology has a higher protein staining efficiency compared to Ponceau S stain. Visualization of the previously activated stain-free technology for total protein on a blot compared with a membrane stained with Ponceau S for 1–2 min.



Validate Western Blot

5



Perform multiplex or chemiluminescent blot detection and validate results with total protein normalization using the ChemiDoc MP imager and Image Lab™ software.

Stain-free technology gives results comparable to those obtained using housekeeping proteins when normalizing western blot data.

Total protein analysis using stain-free technology gives linear results

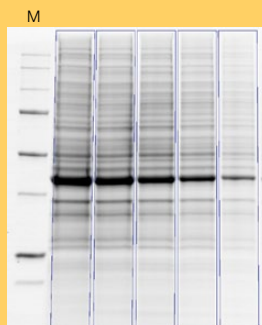


Fig. 5. Stain-free image of a serial dilution. A serially diluted LCL cell lysate was run on a Criterion TGX Any kD Stain-Free precast gel (50–10 µg of total protein per lane was loaded). M, Precision Plus Protein™ Unstained standard.

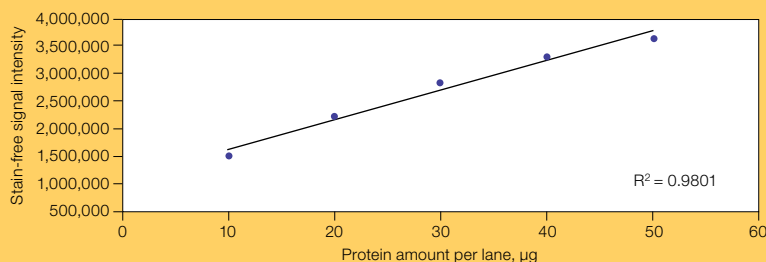


Fig. 6. Stain-free gels give linear results in a serial dilution. A standard curve showing the linearity of stain-free technology with total protein loads in the range of 10 to 50 µg.

Stain-free total protein normalization gives similar results when compared to a housekeeping protein (GAPDH); stripping and reprobing can be avoided

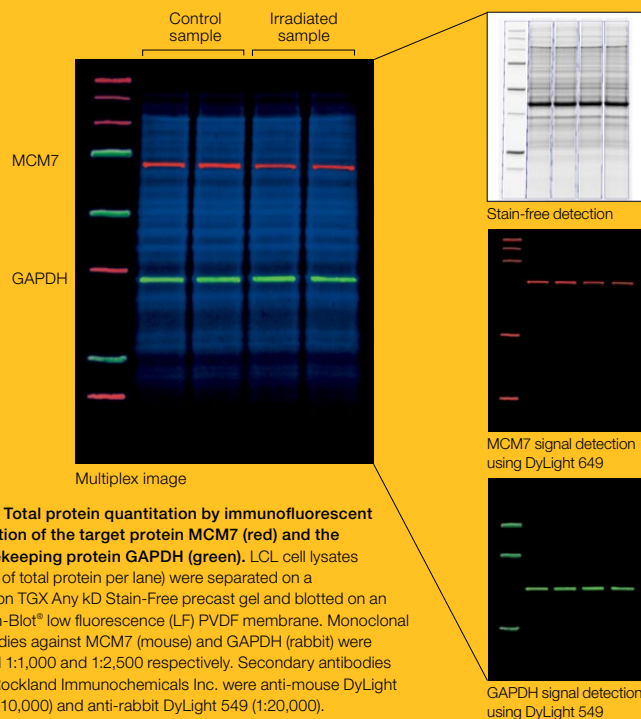


Fig. 7. Total protein quantitation by immunofluorescent detection of the target protein MCM7 (red) and the housekeeping protein GAPDH (green). LCL cell lysates (30 µg of total protein per lane) were separated on a Criterion TGX Any kD Stain-Free precast gel and blotted on an Immobilon-P low fluorescence (LF) PVDF membrane. Monoclonal antibodies against MCM7 (mouse) and GAPDH (rabbit) were diluted 1:1,000 and 1:2,500 respectively. Secondary antibodies from Rockland Immunochemicals Inc. were anti-mouse DyLight 649 (1:10,000) and anti-rabbit DyLight 549 (1:20,000).

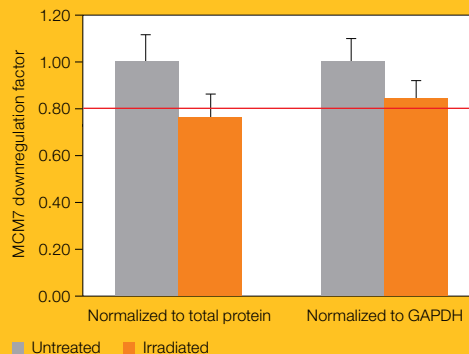

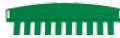






Fig. 8. Expression of MCM7 normalized for total protein analysis using stain-free technology and the housekeeping protein GAPDH. Normalization with stain-free technology and GAPDH give comparable results, consistent with 2-D PAGE (data not shown). Normalization factors were calculated from three independent western blotting experiments. Expression of MCM7 after irradiation is expected to be 0.8 (as indicated by the red line).




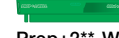

Ordering Information

Mini-PROTEAN TGX Stain-Free Precast Gels

| Description |  10-Well 30 µl |  10-Well 50 µl |  15-Well 15 µl |  IPG/prep 450 µl |  12-Well 20 µl |  8+1-Well 30 µl |
|---|--|--|--|--|--|---|
| Mini-PROTEAN TGX Stain-Free Precast Gels | | | | | | |
| 7.5% | 456-8023 | 456-8024 | 456-8026 | 456-8021 | 456-8025 | 456-8029 |
| 10% | 456-8033 | 456-8034 | 456-8036 | 456-8031 | 456-8035 | 456-8039 |
| 12% | 456-8043 | 456-8044 | 456-8046 | 456-8041 | 456-8045 | 456-8049 |
| 4–15% | 456-8083 | 456-8084 | 456-8086 | 456-8081 | 456-8085 | 456-8089 |
| 4–20% | 456-8093 | 456-8094 | 456-8096 | 456-8091 | 456-8095 | 456-8099 |
| 8–16% | 456-8103 | 456-8104 | 456-8106 | 456-8101 | 456-8105 | 456-8109 |
| Any kD | 456-8123 | 456-8124 | 456-8126 | 456-8121 | 456-8125 | 456-8129 |

All formats are available as both ten packs (catalog numbers listed) and two packs. To order as a two pack, add an "S" to the end of the catalog number for the corresponding ten pack.

Criterion TGX Stain-Free Precast Gels*

| Description |  12+2**-Well 45 µl |  18-Well 30 µl |  26-Well 15 µl |  Prep+2**-Well 800 µl |  IPG+1**-Well 11 cm IPG Strip |
|-------------|--|--|--|---|---|
| 7.5% | 567-8023 | 567-8024 | 567-8025 | — | — |
| 10% | 567-8033 | 567-8034 | 567-8035 | — | — |
| 12% | 567-8043 | 567-8044 | 567-8045 | — | — |
| 18% | 567-8073 | 567-8074 | 567-8075 | 567-8072 | 567-8071 |
| 4–15% | 567-8083 | 567-8084 | 567-8085 | 567-8082 | 567-8081 |
| 4–20% | 567-8093 | 567-8094 | 567-8095 | 567-8092 | 567-8091 |
| 8–16% | 567-8103 | 567-8104 | 567-8105 | 567-8102 | 567-8101 |
| 10–20% | 567-8113 | 567-8114 | 567-8115 | 567-8112 | 567-8111 |
| Any kD | 567-8123 | 567-8124 | 567-8125 | 567-8122 | 567-8121 |

* Criterion TGX Stain-Free gels are sold as a single gel. ** Reference wells accommodate 15 µl of markers/standards.

Catalog # Description

V3 Western Workflow

170-8292 **V3 Western Workflow Complete System for Mini Gels**, ChemiDoc MP imager with LEDs and Image Lab software, 50 Mini-PROTEAN TGX Any kD Stain-Free 10-well precast gels with SDS-PAGE accessories, Mini-PROTEAN Tetra cell, Trans-Blot Turbo starter kit, 50 Trans-Blot Turbo PVDF transfer packs for mini gels

170-8293 **V3 Western Workflow Complete System for Midi Gels**, ChemiDoc MP imager with LEDs and Image Lab software, 50 Criterion TGX Stain-Free 4–20% 18-well precast gels with SDS-PAGE accessories, Criterion cell, Trans-Blot Turbo starter kit, 50 Trans-Blot Turbo PVDF transfer packs for midi gels

Protein Standards

161-0373 **Precision Plus Protein All Blue Standards**
 161-0363 **Precision Plus Protein Unstained Standards**
 161-0385 **Precision Plus Protein™ WesternC™ Pack**

Buffers

161-0732 **10x Tris/Glycine/SDS**
 161-0747 **4x Laemmli Sample Buffer**

Electrophoresis Cell

165-6001 **Criterion Cell**, includes electrophoresis buffer tank, lid with power cables, 3 sample loading guides

165-8004 **Mini-PROTEAN Tetra Cell for Mini Precast Gels**, 4-gel vertical electrophoresis system, includes electrode assembly, companion running module, tank, lid with power cables, mini cell buffer dam

Power Supplies

164-5050 **PowerPac Basic Power Supply**
 164-5070 **PowerPac Universal Power Supply**

Catalog # Description

Blotting System

170-4155 **Trans-Blot Turbo Transfer Starter System**, blotting instrument, includes base, 2 cassettes to hold 1–2 midi or up to 4 mini blotting sandwiches, blot roller, and starter consumable kit

170-4156 **Trans-Blot Transfer Pack**, mini, PVDF, pkg of 10

170-4157 **Trans-Blot Transfer Pack**, midi, PVDF, pkg of 10

170-4158 **Trans-Blot Transfer Pack**, mini, nitrocellulose, pkg of 10

170-4159 **Trans-Blot Transfer Pack**, midi, nitrocellulose, pkg of 10

170-4270 **Trans-Blot Turbo RTA Transfer Kit**, mini, nitrocellulose

170-4271 **Trans-Blot Turbo RTA Transfer Kit**, midi, nitrocellulose

170-4272 **Trans-Blot Turbo RTA Transfer Kit**, mini, PVDF

170-4273 **Trans-Blot Turbo RTA Transfer Kit**, midi, PVDF

170-4274 **Trans-Blot Turbo RTA Transfer Kit**, mini, LF PVDF

170-4275 **Trans-Blot Turbo RTA Transfer Kit**, midi, LF PVDF

Imaging Systems

170-8280 **ChemiDoc MP System**, gel imaging system, PC or Mac, includes darkroom, UV transilluminator, epi-white illumination, camera, power supply, cables, Image Lab software

170-8283 **Red LED Module Kit**

170-8284 **Green LED Module Kit**

170-8285 **Blue LED Module Kit**

Please visit www.bio-rad.com/ad/v3 for more information.

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