Webinar:

Choosing the right protein gel for your research application

CONTINUING EDUCATION (CME/CE/CEU) CREDITS: P.A.C.E. CE | Florida CE

Speaker: Alok Tomar, Ph.D.
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Biography: Alok's Ph.D. and postdoctoral work focused on understanding the role of cytoskeleton and focal adhesion complexes on cell migration and metastasis of cancer cells, resulting in 19 publications in leading peer-reviewed journals. He has been working as a product management professional for over 5 years, launching several next generation sequencing (NGS) based genetic research tests that can assess risks of developing cancer. Currently he is a product manager for Thermo Fisher Scientific protein gel electrophoresis portfolio and has recently launched the Invitrogen™ Novex™ Tris-Glycine Plus Midi gels that provide reproducible quality and performance.

Abstract:
It is widely perceived that protein pre-cast or hand-cast gels are chemically inert and do not cause protein modifications during electrophoresis. However, multiple publications have reported chemical modification of amino acid side chains during separation of proteins by electrophoresis, including deamidation, aspartate–proline bond cleavage, methionine and tryptophan oxidation, and the Michael addition of sulfhydryl or amino groups to the double bond of acrylamide that is not polymerized into the gel matrix. These modifications can change the electrophoretic mobility of proteins resulting in blurred or multiple bands and are detrimental for downstream research applications. For example, mass spectrometry of the modified protein sample results in the predicted peptides appearing at several masses due to the diversity of unwanted modifications.

Choosing the right gel chemistry for a specific research application can help minimize protein modification. For example, neutral pH Bis-Tris gels are recommended for samples with low abundance of target proteins or when downstream applications require high protein integrity (mass spectrometry, posttranslational modification or protein sequencing). Similarly, high molecular weight proteins (up to 500 kDa) can be optimally resolved by using Tris-Acetate

gels whereas low molecular weight proteins (as low as 2.5 kDa) can be optimally resolved using tricine gels. This webinar will highlight the different protein modifications occurring during electrophoresis, the importance of pH in sample integrity, how to choose the right gel chemistry for specific research applications and how to introduce the right new gel chemistry in your research workflow.

Learning objectives—in this webinar you will learn the following information:

- How to choose the right pre-cast gel chemistry for your specific research application.
- Why Bis-Tris gel chemistry is ideal for post-translational modification applications.
- Why Tris-glycine gel chemistry is not ideal for all research applications.