Protein Ladder for Inexpensive Protein Molecular Weight Markers

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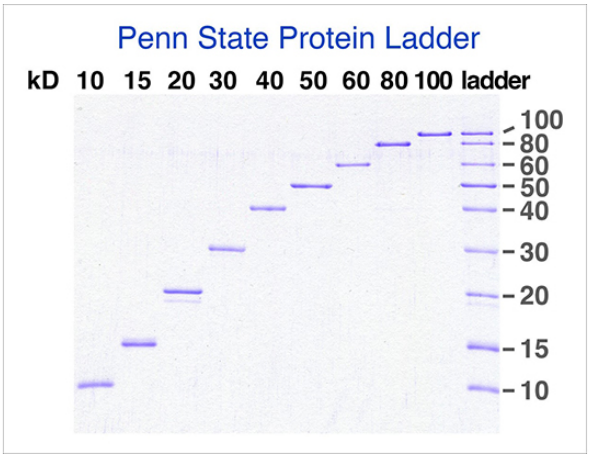

TECHNOLOGY READINESS LEVEL 4-7

Seeking

Licensing | Research

Keywords

- Proteins
- Gel electrophoresis
- Biomarker
- Expression system
- Western blot

Researchers

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Technology Summary

The inventors developed a production system for generating inexpensive protein molecular weight (MW) markers with fixed sizes from 10 to 100kD (10, 15, 20, 30, 40, 50, 60, 80, 100 kD). The production system expresses at very high levels of soluble protein (10 to 50 mg/L culture) at room temperature, either as individual proteins or coexpressed for greater efficiency. Each protein can be purified in a single chromatography step purified in a single chromatography step using minimal equipment and each protein migrates appropriately on SDS-PAGE gels. The proteins can be visualized in Western blots without specialized antibodies since each protein contains an immunoglobulin-binding domain.

Application & Market Utility

Protein ladders are the compilation of several different MW markers of known weights. These reference reagents are used to estimate the size of proteins separated by gel electrophoresis for protein expression, purification and analysis. Early, inexpensive protein ladders have been replaced by more precise MW markers costing about $1 per lane that have increased visibility during electrophoresis and on Western blots. The invention performed comparably to commercial products on standard SDS-PAGE gels though at an estimated unit cost of a penny ($0.01) per lane.

Next Steps

The invention may open up additional applications as protein standards for mass spectroscopy and quality control of protein expression systems.