



# Protein Production Workflow – Centrifugation Highlights

70 YEARS OF  
CENTRIFUGATION

Produce ▶ Harvest ▶ Isolate ▶ Lyse ▶ Clear ▶ Purify ▶ Characterize



**Preparation of  
production cell line**  
• Thaw, grow, expand



**Preparation of  
plasmid DNA**

- Planning
- Cloning, transformation
- Isolate clean and high number of DNA copies



**Transformation/  
Transfection**



**Protein Amplification**



**Protein Purification**



Avanti JXN-30



Allegra X-15R