Tools for protein purification

From expression to detection, your road map to better results

Application	Target	Ligand or chemistry	Thermo Scientific™ and Invitrogen™ products	Bead and resin type	Binding capacity (settled resin) (see website for details)	Maximum linear flow rate (cm/hr)	Packaging (see Figure 1)	Recommended scale (see Table 1)				
Ion exchange purification thermofisher.com/ionexchange	Protein charge	Strong anion exchange thermofisher.com/sax	POROS™ HQ resin Salt tolerance = 150 mM		60–70 mg/mL (dynamic)	5,000				B	P	PRO
			POROS™ XQ resin		>140 mg/mL (dynamic)					B	P	PRO
		Strong cation exchange thermofisher.com/scx	POROS™ XS resin		>100 mg/mL (dynamic)					B	P	PRO
Fusion protein purification thermofisher.com/fusionproteinpurification	His-tagged protein	Ni-NTA or Ni-IDA (higher binding capacity) thermofisher.com/nickel	ProBond™ Nickel Chelating Resin		1–5 mg/mL	700				B		
			HisPur™ Ni-NTA Magnetic Agarose Beads		≥500 µg/mL bead suspension	NA			HTB			
			HisPur™ Ni-NTA Resin		~60 mg/mL	700				B		
			HisPur™ Ni-NTA Superflow Agarose		>60 mg/mL (dynamic)	1,200				B	P	
		Cobalt (higher purity) thermofisher.com/cobalt	HisPur™ Cobalt Resin		≥15 mg/mL	700				B		
			HisPur™ Cobalt Superflow Agarose		>30 mg/mL (dynamic)	1,200				B	P	
	GST fusion protein	Glutathione thermofisher.com/gstpurification	Pierce™ Glutathione Magnetic Agarose Beads		≥10 mg/mL	NA			HTB			
			Pierce™ Glutathione Agarose		~40 mg/mL	700				B		
			Pierce™ Glutathione Superflow Agarose		~30 mg/mL (dynamic)	1,200				B	P	
	DYKDDDDK (FLAG™)-tagged proteins	Anti-DYKDDDDK (FLAG™) antibody	Pierce™ Anti-DYKDDDDK Magnetic Agarose		≥3.2 mg/mL	NA			HTB			
			Pierce™ Anti-DYKDDDDK Affinity Resin		≥3 mg/mL	150				B	P	
	HA-tagged protein	Anti-HA antibody	Pierce™ Anti-HA Magnetic Beads		≥100 µg/mL bead suspension	NA		HTS				
			Pierce™ Anti-HA Agarose		102–144 nmol/mL	700				B		
	c-Myc–tagged protein	Anti-c-Myc antibody	Pierce™ Anti–c-Myc Magnetic Beads		≥100 µg/mL bead suspension	NA		HTS				
			Pierce™ Anti–c-Myc Agarose (Superflow)		60–150 nmol/mL	700				B	P	
Antibody purification thermofisher.com/antibodypurification	IgG	Negative selection	Melon™ Gel		>90% yield and >80% purity for most antibodies	700				B		
		Protein A thermofisher.com/protein-a	Dynabeads™ Protein A magnetic beads		250–300 µg/mL bead suspension	NA		HTS				
			Pierce™ Protein A Plus Agarose		34 mg/mL	700				B		
			POROS™ MabCapture™ A Select Resin		≥37 mg/mL (dynamic)	5,000				B	P	PRO
		Protein G thermofisher.com/protein-g	Dynabeads™ Protein G magnetic beads		250–300 µg/mL bead suspension	NA		HTS				
			Pierce™ Protein G Agarose		11–15 mg/mL	700				B		
			POROS™ MabCapture™ G Select Resin		≥13 mg/mL (dynamic)	5,000				B	P	PRO
		Protein A/G thermofisher.com/protein-ag	Pierce™ Protein A/G Magnetic Beads		~850 µg/mL bead suspension	NA		HTS				
			Pierce™ Protein A/G Magnetic Agarose Beads		>40 mg/mL				HTB			
			Pierce™ Protein A/G Agarose		≥7 mg/mL	700				B		
			Pierce™ Protein A/G Plus Agarose		≥50 mg/mL					B		
			POROS™ MabCapture™ A/G Select Resin		≥22 mg/mL (dynamic)	5,000				B	P	PRO
		Protein L thermofisher.com/protein-l	Pierce™ Protein L Magnetic Beads		≥1.1 mg/mL bead suspension	NA		HTS				
			Pierce™ Protein L Agarose		5–10 mg/mL	700				B		
			Pierce™ Protein L Plus Agarose		10–20 mg/mL					B		
		Thiophilic adsorbent	Pierce™ Thiophilic Adsorbent		20 mg/mL	700				B		
	IgM	Immobilized mannan binding protein (MBP)	Pierce™ Mannan Binding Protein Agarose		1 mg/mL	700				B		
	IgA	Immobilized jacalin	Pierce™ Jacalin Agarose		1–3 mg/mL	700				B		
Biotin affinity purification thermofisher.com/biotinbinding	Biotinylated protein	Avidin	Pierce™ Avidin Agarose Resin		≥20 µg biotin/mL	700				B		
		Monomeric avidin	Pierce™ Monomeric Avidin Agarose Resin		≥1.2 mg biotinylated protein/mL	700				B		
		Streptavidin	Pierce™ Streptavidin Magnetic Beads		~550 µg/mL bead suspension	NA		HTS				
			Pierce™ High Capacity Streptavidin Agarose		≥10 mg biotinylated protein/mL	700				B		
		NeutrAvidin™ protein	Pierce™ NeutrAvidin™ Agarose		≥1–2 mg biotinylated protein/mL	700				B		
Protein immobilization thermofisher.com/activatedsupports	Protein with affinity to custom ligand	Amine reactive	Pierce™ NHS-Activated Agarose		>25 mg/mL	700				B		
			AminoLink™ Plus Coupling Resin		15–20 mg/mL	700				B		
		Sulfhydryl reactive	SulfoLink™ Coupling Resin		20 mg/mL	700				B		

Key upstream products

- Protein expression kits **thermofisher.com/proteinexpression**
- Cell lysis reagents **thermofisher.com/proteinextraction**
- Inhibitor tablets and cocktails **thermofisher.com/inhibitorcocktails**
- Carrier proteins **thermofisher.com/carrierproteins**
- Conjugation kits **thermofisher.com/abconjugation**
- Adjuvants **thermofisher.com/adjuvants**
- Biotinylation kits **thermofisher.com/biotinylation**

Key downstream products

- Dialysis cassettes and devices **thermofisher.com/dialysis**
- Desalting spin columns **thermofisher.com/desalting**
- Protein concentrators **thermofisher.com/concentrators**
- Protein assays **thermofisher.com/proteinassays**
- Protein standards **thermofisher.com/proteinstandards**
- Protein gels **thermofisher.com/page**
- Protein stains **thermofisher.com/proteinstains**
- Magnetic stands **thermofisher.com/magnets**
- Thermo Scientific™ KingFisher™ magnetic systems **thermofisher.com/kingfisher**
- Benchtop centrifuges **thermofisher.com/benchtopcentrifuges**
- Endotoxin removal resins and endotoxin quantitation kits **thermofisher.com/endotoxin**
- HRV 3C protease **thermofisher.com/tagprotease**
- ELISA kits **thermofisher.com/elisa**
- Luminex® kits **thermofisher.com/luminex**
- Immunostaining **thermofisher.com/immunostaining**
- Western blotting **thermofisher.com/western**
- Antibody fragmentation kits **thermofisher.com/ab-fragmentation**
- Antibody isotyping kits **thermofisher.com/ab-isotyping**
- Biotin-binding protein conjugates **thermofisher.com/biotinconjugates**

Table 1. Select your resin based on purification scale and application.

Scale	High-throughput screening (HTS)	High-throughput batch (HTB)	Batch (B)	Pilot (P)	Process (PRO)
Description	Small scale Automation compatible	Lab or bench scale	Lab or bench scale	Scale-up desired	Production scale
Yield	Microgram-scale	Milligram-scale	Milligram-scale	Gram-scale	Kilogram-scale
Format	Magnetic particle processor	Magnetic particle processor 96-well spin plate (agarose)	Gravity flow Spin column (agarose) Fast protein liquid chromatography (FPLC) at low flow rates	FPLC at medium flow rates	FPLC at high flow rates
Application	High-throughput screening Interaction studies Mutational analysis	High-throughput screening Interaction studies Mutational analysis requiring mg scale	Functional assays Structural analysis	Structural analysis	Bulk production
Recommended resin type	Magnetic bead (1–2.8 µm)	Magnetic agarose (10–40 µm) Agarose (45–165 µm)	Superflow (45–165 µm) UltraLink™ resin (50–80 µm) POROS resin (50 µm)		

Loose resin	Magnetic format	Spin plate	Spin column	Spin column kit	Chromatography cartridge	Immunoprecipitation (IP), co-IP, or pulldown kit

Figure 1. Packaging formats.

Find out more at **thermofisher.com/proteinpurification**