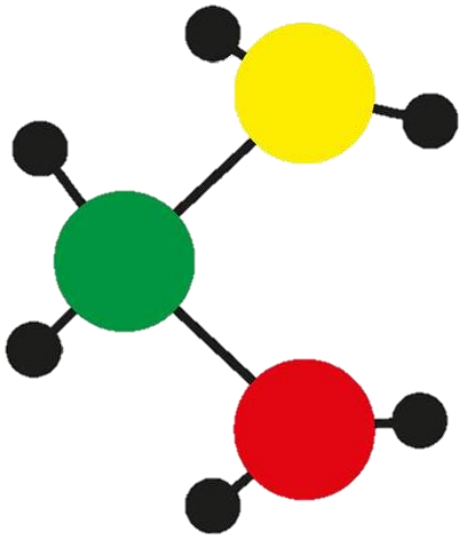

LT Biotech

Chromatorgaphy resin lines

Choosing the right **SEC resin**

[1] *SC – Swelling coefficient;* [2] *SEC – size-exclusion chromatography;* [3] *AA/MBSA – acrylic anhydride-N-N-methylene-bis-sulfamide* [4] *ND – no data*	*Persefose* **– Agarose** based matrix line for separation of **large size** molecules and complexes	*Persecryl* **– AA/MBSA** [3] based matrix line for separation of **medium size** molecules and complexes	*Persedex* **– Dextran** based matrix line for separation of **small size** molecules and complexes	*SP*-**dex** **– Agarose-Dextran** based matrix line for separation of **medium size** molecules and complexes
Type	SEC [2]	SEC [2]	SEC [2]	SEC [2]
Matrix	Agarose	AA/MBSA [3]	Dextran	Agarose-Dextran
Particle size (µm)	45-165	25-75	10-40 to 100-300	22-44
Separation range (kDa)	10-20 000	1-250	<0.7-30	1-600
Main usage of the line	Separation of **large size** molecules, **extra wide range** of separation	Separation of **medium size** molecules, **wide range** of separation	Separation of **small size** molecules**, small range** of separation	Separation of **medium size** molecules**, medium range** of separation
SC [1] (ml/g)	ND [4]	ND [4]	1.9-2.3 to 9-11	ND [4]

Choosing the right **IEX resin**

[1] *DBC – Dynamic Binding Capacity;* [2] *IEX – ion-exchange chromatography:* [3] *SAX, SCX, WAX, WCX - strong/weak anion/cation* [**Persedex* – **dextran** based 80 µm matrix for weak interactions]	***Persefose**** – **Agarose** based matrix line with **optimal** price-to-quality ratio and a **wide range** of interactions from weak to strong	***Lepta*** – **Rigid Agarose** based matrix ***Premium*** line for the **maximum binding** capability or best resolution purification	***Aether*** – [4] *Polymethyl-methacrylate* **(PMMA)** based matrix line, **resistant** to chemical and physical exposure	***Helios*** – [5] *Polystyrene-divinylbenzene* **(PS/DVB)** based matrix line, **resistant** to chemical and physical exposure
Type	IEX [2]	IEX [2]	IEX [2]	IEX [2]
Matrix	Agarose	Agarose *Premium*	PMMA [4]	PS/DVB [5]
Mean particle size (µm)	34, 90, 200; [80]*	90 (40 – WAX [3] only)	80	15, 30, 50
Advantages of the line	Variety to choose	Maximum DBC [1]	Matrix resistance	Matrix resistance
Characteristics and usage	**Multiple** particle size SAX, SCX, WAX, WCX [3] **[WAX, WCX]***	One particle size, **Best interactions** SAX, SCX, (WAX) [3]	One particle size, **Different interactions** SAX, SCX, WAX, WCX [3]	**Different particle** size, Strong interactions SAX, SCX [3]
DBC [1] (mg BSA/ml resin)	50-90 mg/ml	60-100 mg/ml	90-110 mg/ml	45-140 mg/ml

Choosing the right **Affinity chromatography resin**

[1] *DBC – Dynamic Binding Capacity;* [2] *NTA – nitrilotriacetic acid;* [3] *IMAC - immobilized metal affinity chromatography;* [4] *CNBr – cyanogen bromide;* [5] *GST – glutathione-S-transferase*	***Persefose*** – **Agarose** based matrix line with **optimal** price-to-quality ratio and a **wide range** of interacting molecules	***Lepta*** – **Rigid Agarose** based matrix ***Premium*** line for the **maximum binding** capability or best resolution purification	***Aether*** – **Agarose** based matrix line, designed specifically **for metal chelating** affinity purification	***Helios*** – [6] *Polystyrene-divinylbenzene* **(PS/DVB)** based **resistant** matrix line specifically **for mRNA**
Matrix	Agarose	Agarose *Premium*	Agarose *Chelate*	PS or PS/DVB [6]
Mean particle size (µm)	34-90	60-85	80	50
Ligands	a) Ni^{2+}-NTA [2] or IMAC [3] b) Glutathione c) Heparin (CNBr [4], etc.)	a) Protein A, G, L b) 2-mercaptopyridine c) Cibacron Blue	a) Aminotriacetic or Iminodiacetic acid	a) dT20mer or dT25mer
Used for purification of	a) **His-Tag** proteins b) **GST-Tag** proteins [5] c) **DNA-binding** proteins	a) **Antibodies** b) **Plasmid DNA** c) **ATP-binding** proteins	a) specifically for **metal chelating** affinity purification	a) specifically for **mRNA** and polyA-oligonucleotides
DBC [1] (mg/ml resin)	≥40 mg His-Tag protein/ml	≥60 mg human IgG/ml	≤100 µmol Cu^{2+}/ml	2-3 mg mRNA/ml

Choosing the right **HIC** and **RPC resin**

[1] *HIC – hydrophobic interaction chromatography;* [2] *RPC – reverse phase chromatography;*	***Persefose*** – **Agarose** based matrix optimal line for HIC	***Lepta*** – **Rigid Agarose** based matrix ***Premium*** line for HIC	***Corus**** – **PS/DVB** [3] **small** ***Demerus**** – **PS/DVB** [3] **big** particles matrix	***Amphirus*** – [3] *Polystyrene-divinylbenzene or* [4] *Polymethacrylate* matrix for RPC
Type	HIC [1]	HIC [1]	RPC [2]	RPC [2]
Matrix	Agarose	Agarose *Premium*	PS/DVB [3]	PS/DVB [3] or PMMA [4]
Mean particle size (µm)	34-90	40-80	15-30*, 30-150**	30-150
Characteristics	Ligands: 5-50 µmol/ml	Ligands: 5-53 µmol/ml	Pore size: 100-300 Ä	Pore size: 100-300 Ä
Functional group	a) Butyl-S b) Butyl c) Octyl d) Phenyl	a) – b) Butyl c) Octyl d) Phenyl	–	–
Hydrophobicity	a) **Ultra weak** b) **Weak** c) **Strong** d) **Strong-Ultra strong**	a) – b) **Weak** c) **Strong** d) **Strong-Ultra strong**	For compounds with hydrophobic moieties **with out** a dominant **polar** character	For compounds with hydrophobic moieties **with out** a dominant **polar** character

Choosing the right **CHT** and **MMC resin**

[1] *CHT – ceramic hydroxyapatite;* [2] *MMC – mixed-mode chromatography;* [3] *DBC – Dynamic Binding Capacity*	***Pleiad*** – **Hydroxyapatite (CHT)** [1] based matrix line used for separation by **calcium and phosphate** interactions		***Lepta*** – **Mixed-mode** or multimodal chromatography (MMC) [2], separation by **two or more** types of interactions	
	Type I	***Type II***	***MMC***	***MMA***
Type	CHT [1]	CHT [1]	MMC [2]	MMC [2]
Matrix	Hydroxyapatite	Hydroxyapatite	Agarose *Premium*	Agarose *Premium*
Mean particle size (µm)	20, 40, 60, 80	20, 40, 60, 80	40, 75	40, 75
Interaction	**Strong**	**Moderate**	**Carboxyl**	**Amino**
Functional groups	**Calcium** + **Phosphate** + **Hydrogen** bonds	**Calcium** + **Phosphate** + **Hydrogen** bonds	**Carboxyl** groups + **Hydrogen** bonds + **Hydrophobic** groups	**Amino** groups + **Hydrogen** bonds + **Hydrophobic** groups
DBC [3] (mg/ml resin)	≥25-60 mg mAb/ml	≥15-25 mg mAb/ml	≥30 mg BSA/ml	≥45 mg BSA/ml