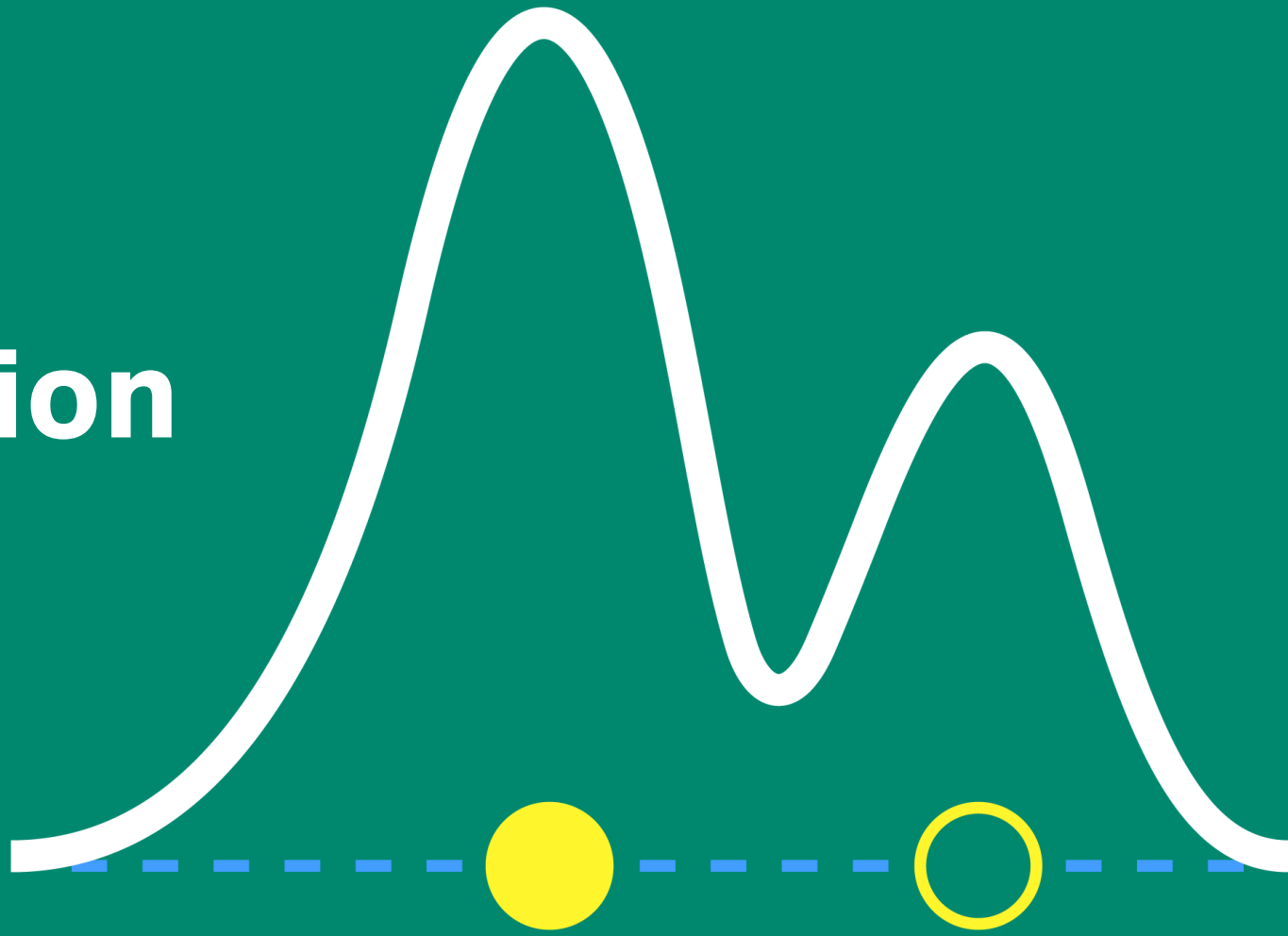
cytiva

Introduction to protein purification

Part 2: Protein purification

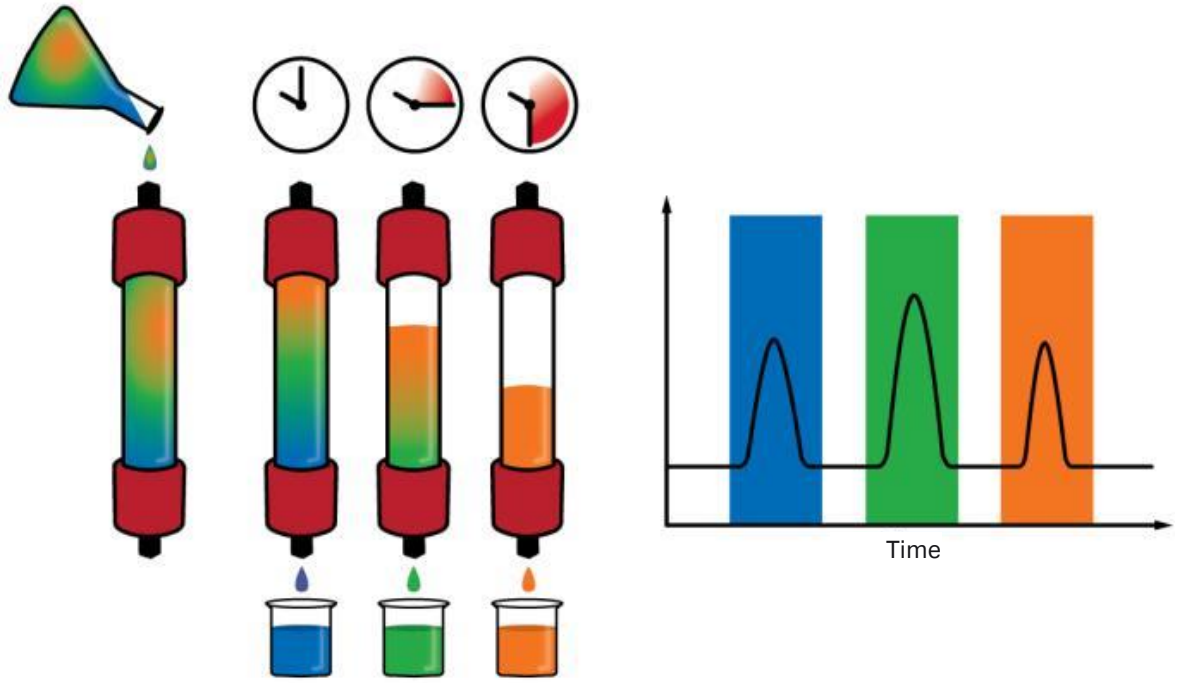


Chromatography is the most common technique for purifying proteins

What is chromatography?

Separation of components using differential affinities of the components for a mobile phase and for a stationary phase, through which they pass

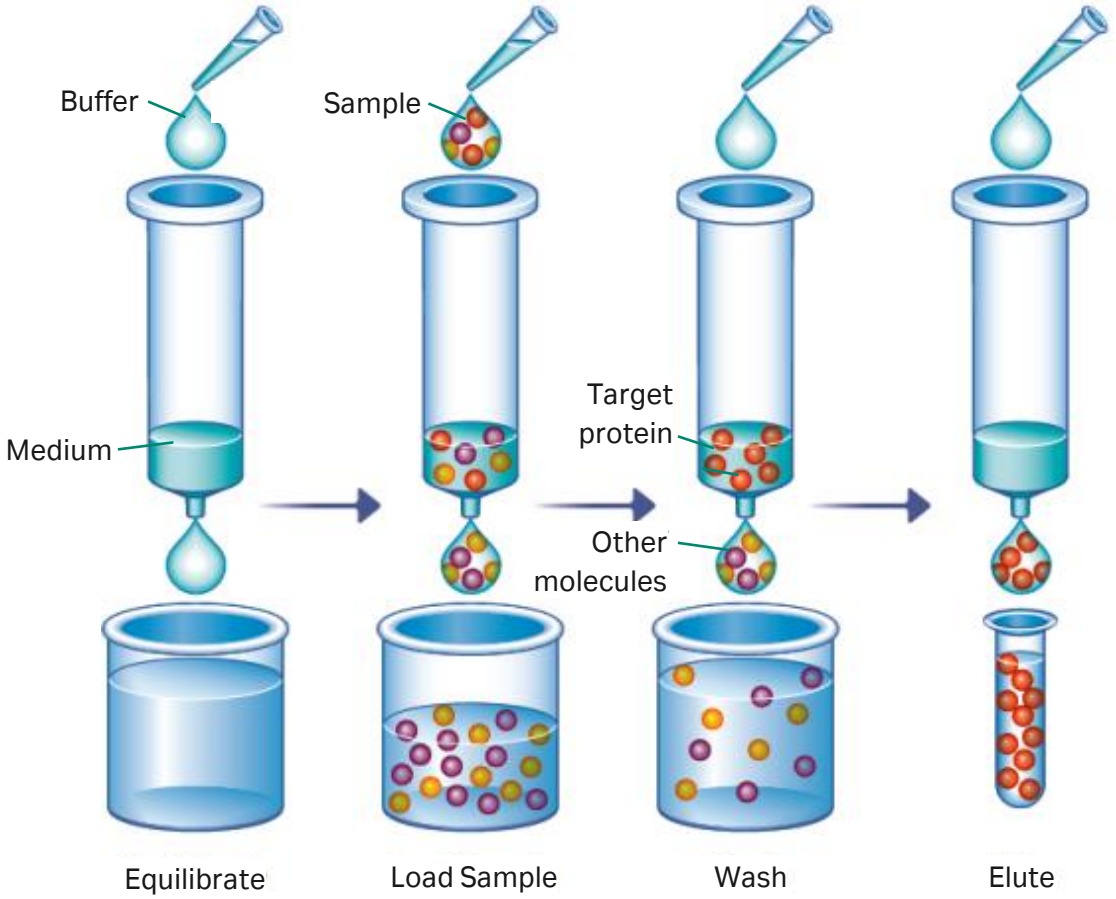
"Drawing with colour"
(Tswett, inventor of chromatography, 1903)



Liquid chromatography

- Buffer (mobile phase) pass through a medium (resin) containing chromatography beads (stationary phase)
- Different bead properties can be used to purify different target proteins
  - For example, a bead with small pores can be used to purify a small target from larger molecules in the same sample

Chromatography principle



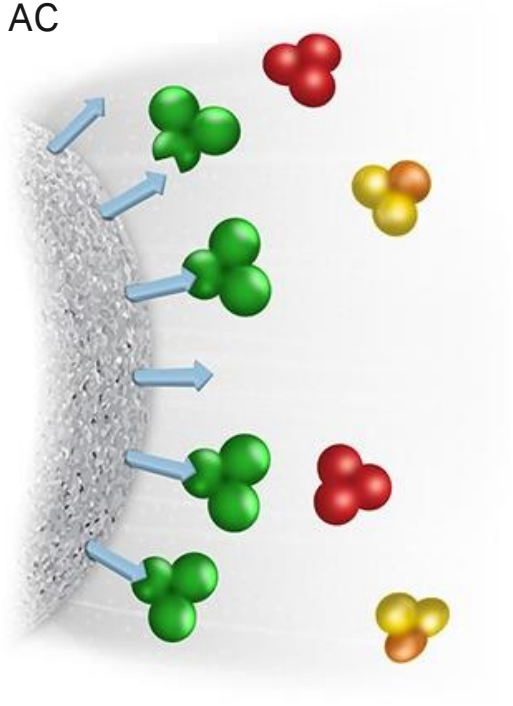
Protein properties used in chromatography

Protein property	Technique
Biospecific affinity (tags)	Affinity chromatography (AC)
Hydrophobicity	Hydrophobic interaction chromatography (HIC)
Net charge	Ion exchange chromatography (IEX)
Size/volume	Size exclusion chromatography (SEC) (also called gel filtration [GF])

We offer handbooks that are a great reference for practical tips and in-depth information about common chromatography techniques.
To download, visit our handbook page.

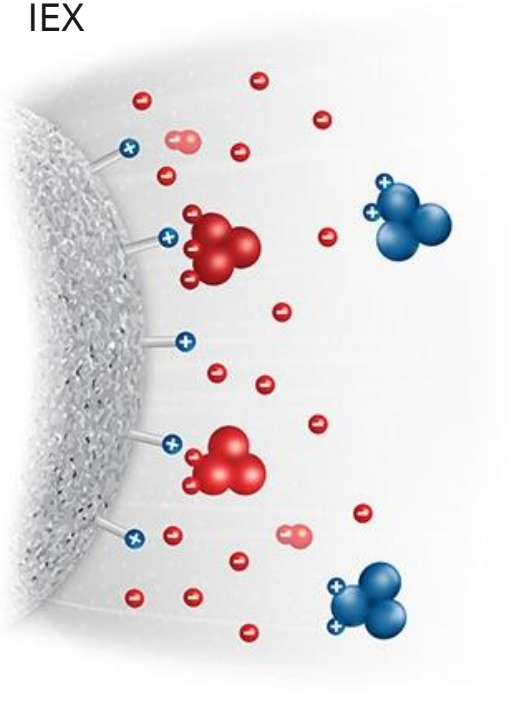
Schematics of common chromatography techniques

AC



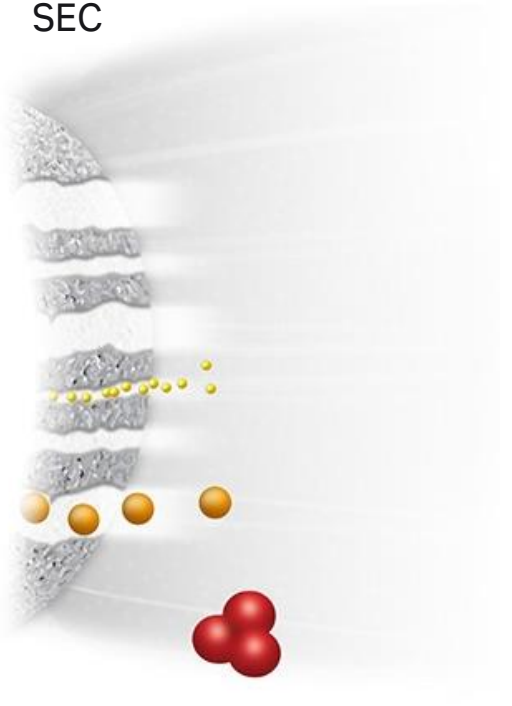
Watch AC principle video

IEX



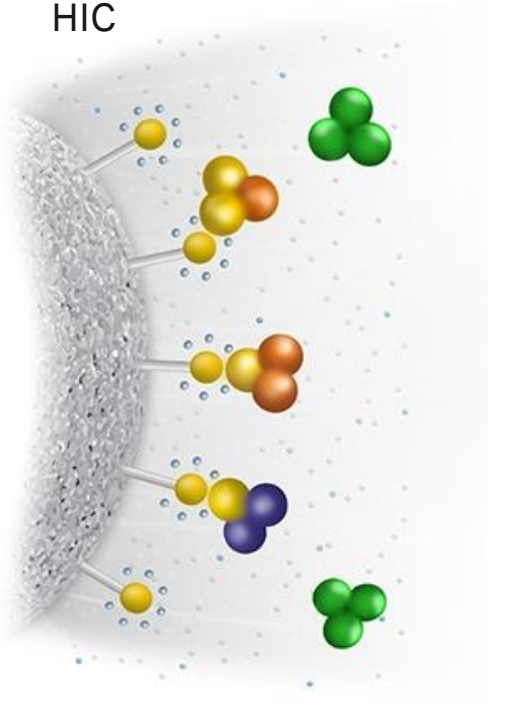
Watch IEX principle video

SEC



Watch SEC (or GF) principle video

HIC



Watch HIC principle video

Comparison: Manual vs automated purification

Manual purification

Little training or start-up time required

Easy to do parallel runs for increased throughput

Automated purification

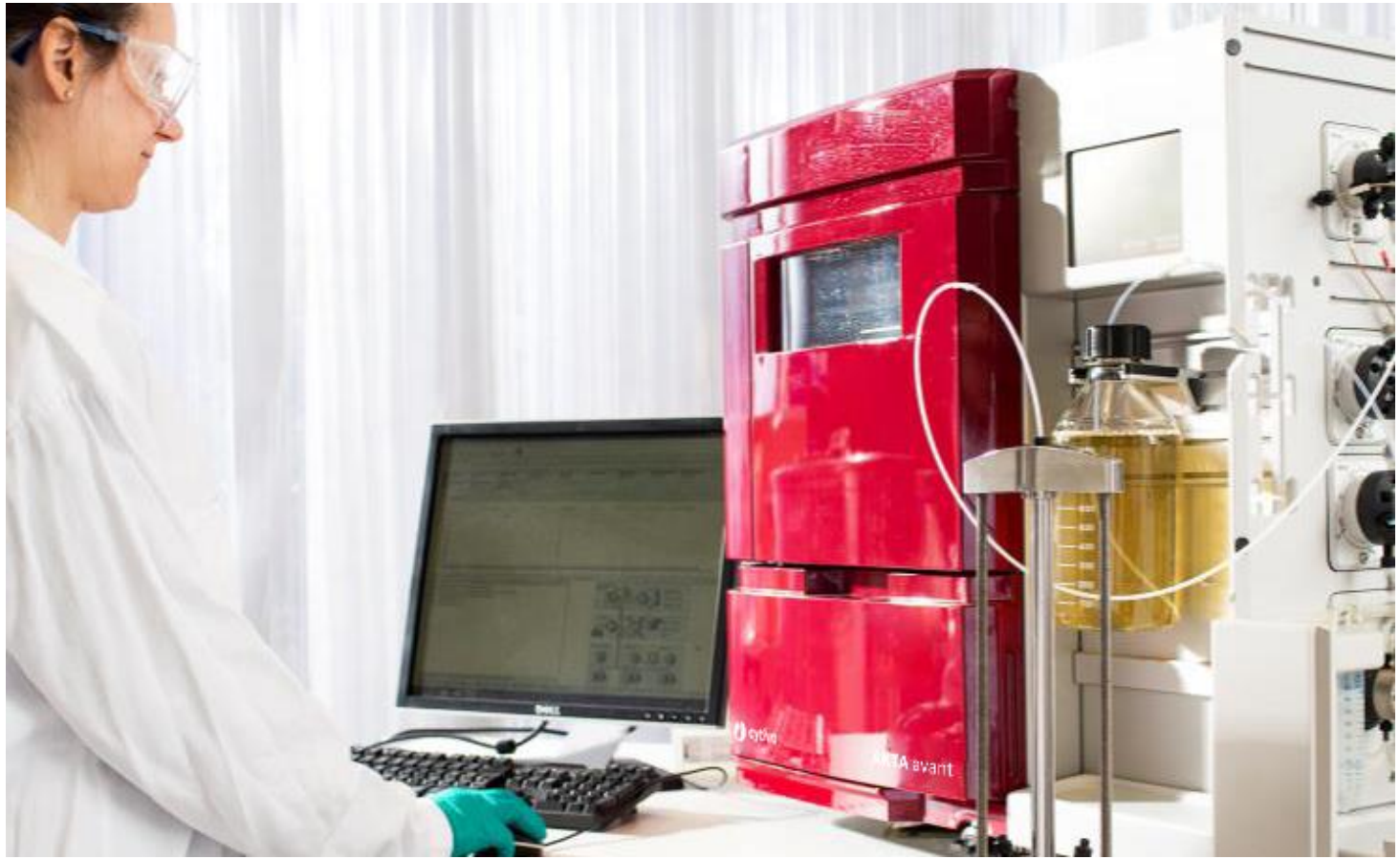
Automation — convenience

Gradient elution — high resolution

Reproducibility

Documentation

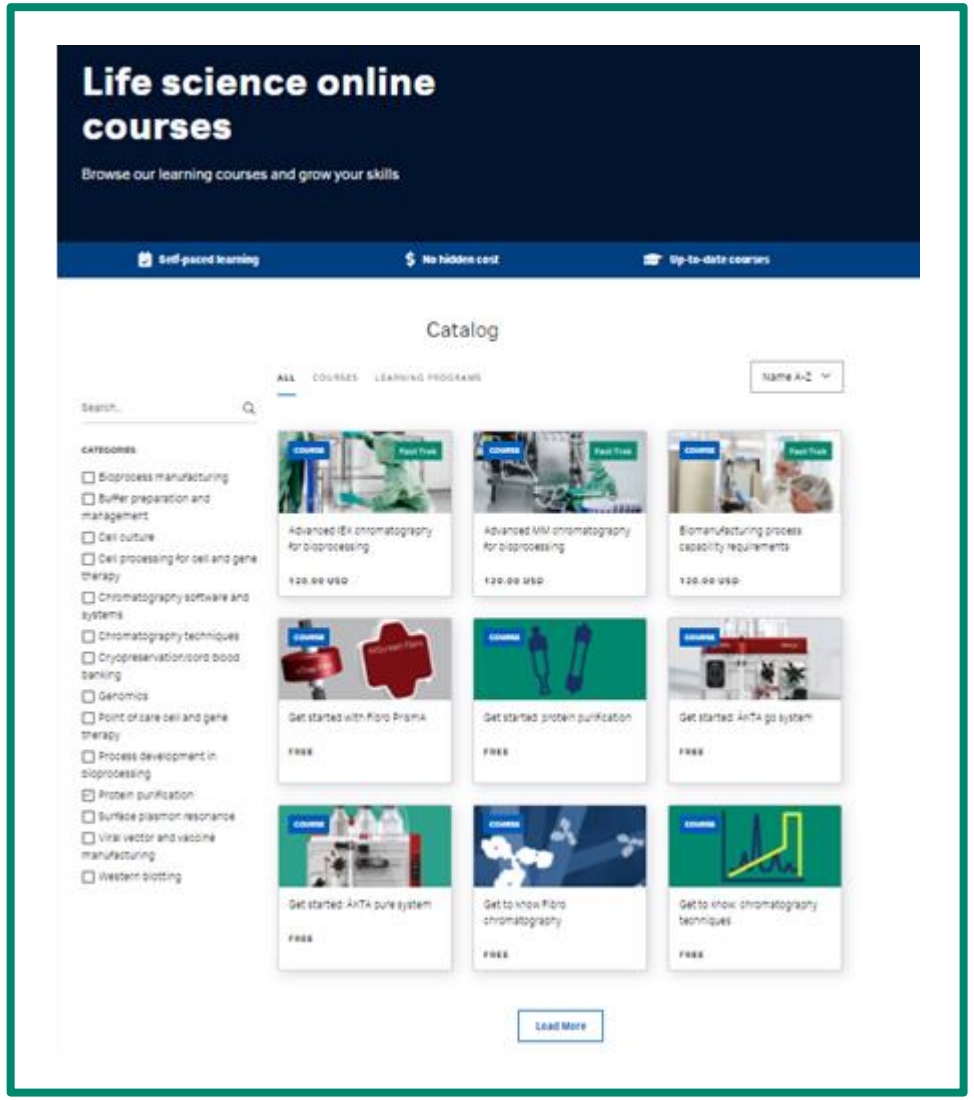
Summary protein purification



Efficient purification of proteins is required both in research and in production of biopharmaceuticals.

Chromatography is a technique to purify proteins based on properties like size and net charge.

Protein purification can be performed manually or automatically.



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