

STREP-TACTIN[®] VS STREP-TACTIN[®]XT

The Strep-tag[®] System

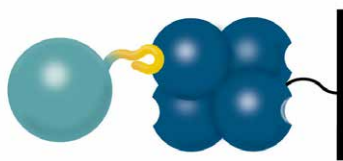


The purification procedure between Strep-Tactin® and Strep-Tactin®XT differs in:

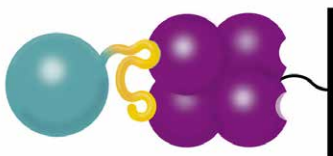
- › Elution step
- › Regeneration step

Two specificity conferring steps allow high purity:

- › Specific binding of the Strep-tag® motif to Strep-Tactin® and Strep-Tactin®XT
- › Competitive elution with desthiobiotin or biotin, respectively



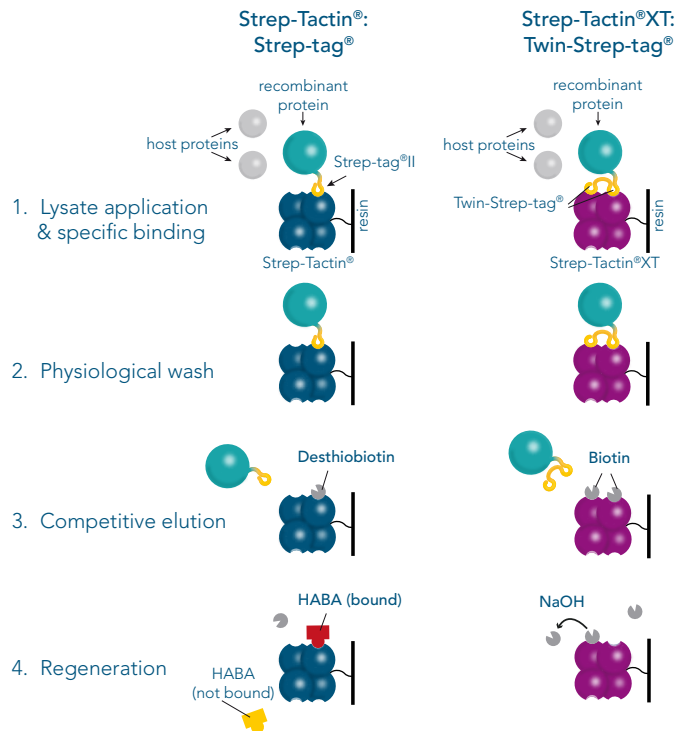
2nd generation Strep-tag® system: Strep-tag®II and Strep-Tactin®



3rd generation Strep-tag® system: Twin-Strep-tag® and Strep-Tactin®XT

PURIFICATION PROCEDURE OF STREP-TACTIN® AND STREP-TACTIN®XT

A comparison of purification via Strep-Tactin® and Strep-Tactin®XT depicts two changes in the procedure. The first and second step (lysate application & wash) remain the same. But the elution and the regeneration steps are different for both systems. For elution from Strep-Tactin® desthiobiotin is used whereas Strep-Tactin®XT requires biotin for elution. Also the regeneration step differs. HABA is used for regeneration from Strep-Tactin® and in case of Strep-Tactin®XT 10 mM NaOH is applied.



COMPARISON OF STREP-TACTIN® AND STREP-TACTIN®XT

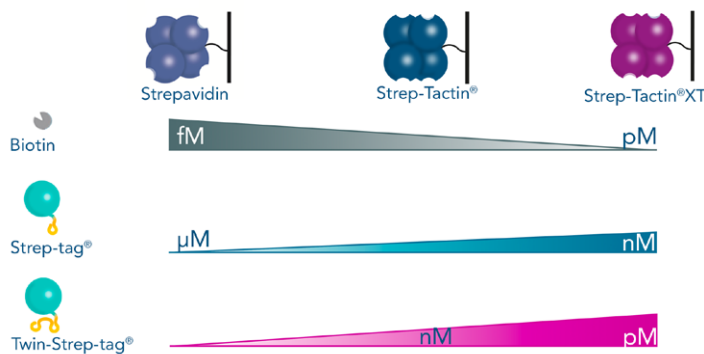
| | Strep-Tactin® | Strep-Tactin®XT |
|------------------|---|--|
| Binding affinity | Strep-tag®II: µM range Twin-Strep-tag®: nM range | Strep-tag®II: nM range Twin-Strep-tag®: pM range |
| Elution | Elution with Buffer E (2.5 mM Desthiobiotin) | Elution with Buffer BXT (50 mM Biotin) |
| Regeneration | Elution with Buffer R (HABA) | Elution with 10 mM NaOH |
| Applications | cytosolic protein | diluted, secreted protein denaturing conditions batch purification immobilization |
| Binding capacity | Full binding capacity is not utilized due to low binding affinity | The binding capacity is increased due to a higher affinity to the tags |

STREP-TACTIN®XT HAS A NEAR COVALENT BINDING AFFINITY FOR TWIN-STREP-TAG®

The Strep-tag® system is based on the Streptavidin:Biotin binding, which is one of the strongest non-covalent biological interactions known. With IBA's newly developed Strep-Tactin®XT a near covalent binding affinity in combination with Twin-Strep-tag® can be achieved. This is beneficial for e.g. protein purification, protein interaction analysis or assays (e.g. BIAcore). Since Biotin is still binding strongly to Strep-Tactin®XT it can be used for elution of Twin-Strep-tag® fusion proteins.

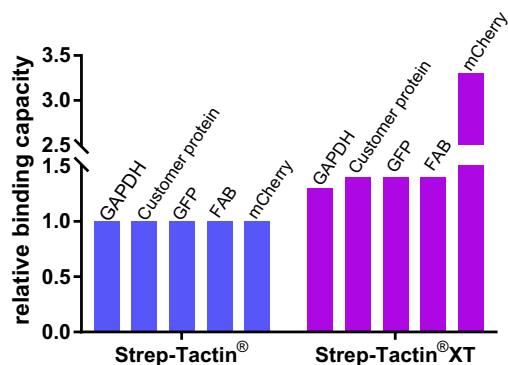
Further, intensive wash steps can lead to loss of target protein when using Strep-Tactin®. Due to the high binding affinity protein loss can be prevented by using the Strep-Tactin®XT:Twin-Strep-tag® system.

Binding affinities of the Strep-tag® components:



INCREASED BINDING CAPACITY OF STREP-TACTIN®XT ENABLE HIGHER YIELDS

Strep-Tactin®XT has a higher relative protein binding efficiency than Strep-Tactin®, leading to increased protein yields compared to Strep-Tactin® for all tested proteins. On average, StrepTactin®XT provides almost 2-fold more protein than Strep-Tactin®. Strep-Tactin®XT also ensures sharp elution profiles achieving high concentration of the target protein.



Comparison of the maximum protein yield, which could be purified using Strep-Tactin® (left) and Strep-Tactin®XT (right) for a set of different Twin-Strep-tag® fusion proteins.

Contact our customer support:
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Visit our homepage for more:
www.iba-lifesciences.com/Strep-Tactin-vs-Strep-TactinXT.html

Strep-Tactin®XT products:

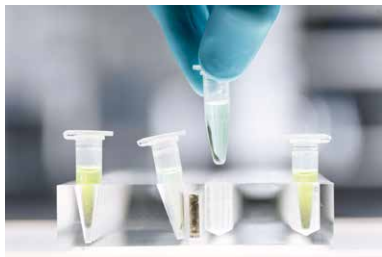
- › Strep-Tactin®XT Superflow® 50 % suspension
- › Strep-Tactin®XT Superflow® gravity flow columns
- › Strep-Tactin®XT Superflow® cartridges for Äkta
- › MagStrep "type3" XT magnetic beads



The binding efficiency of Strep-Tactin®XT (right) is higher compared to Strep-Tactin® (left). This results from a higher binding affinity of Strep-Tactin®XT to Twin-Strep-tag®. The same amount of mCherry-Twin-Strep-tag® protein was applied to both columns.

The Strep-tag® system is highly recommended for:

- › Bioactive proteins (enzymes)
- › Metallo proteins
- › Membrane proteins
- › Diluted, low abundant proteins
- › Protein:protein interactions
- › High affinity applications



NEW APPLICATIONS WITH STREP-TACTIN®XT:TWIN-STREP-TAG®

Denaturing conditions

- › Strep-Tactin®XT allows protein purification with up to 6 M urea
- › Strep-Tactin®XT provides higher purity compared to the Ni-NTA:His₆-tag system
- › Simple one-step elution of the target protein without pH shift
- › ! Strep-Tactin® is not stable under denaturing conditions

Batch purification from dilute solutions using magnetic beads

- › MagStrep "type3" XT beads enable fast purification of Twin-Strep-tag® proteins
- › Superior Strep-Tactin®XT coat for highly efficient binding
- › High binding capacity, very low non-specific protein binding
- › Flexible elution conditions

Immobilization with Strep-Tactin®XT:Twin-Strep-tag®

- › Immobilization of Twin-Strep-tag® fusion proteins on surfaces such as microtiter plates, Biacore chips, etc.
- › Efficient high-throughput screening of targets in 96 well plates
- › Suitable for ELISA, diagnostic assays, drug screenings, etc.
- › Highly efficient and stable binding of ligand and receptor

CHOOSE THE RIGHT RESIN ACCORDING TO YOUR APPLICATION

| Application and Conditions | | Strep-Tactin® | | Strep-Tactin®XT | |
|--|--------------------------|---------------|-----------------|-----------------|-----------------|
| | | Strep-tag®II | Twin-Strep-tag® | Strep-tag®II | Twin-Strep-tag® |
| Purification | Concentrated (cytosolic) | good | good | good | good |
| | Diluted (secreted) | poor | good | good | good |
| | Batch (magnetic beads) | poor | medium | medium | good |
| | Denatured (6 M urea) | no | no | medium | good |
| Detection (Western, ELISA) | | good | good | good | good |
| Assay/Immobilization (MTP, chips) incl. optional elution | | poor | medium | medium | good |

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