iba Solutions For Life Sciences

Protein Production & Assays

STREP-TACTIN® VS STREP-TACTIN®XT

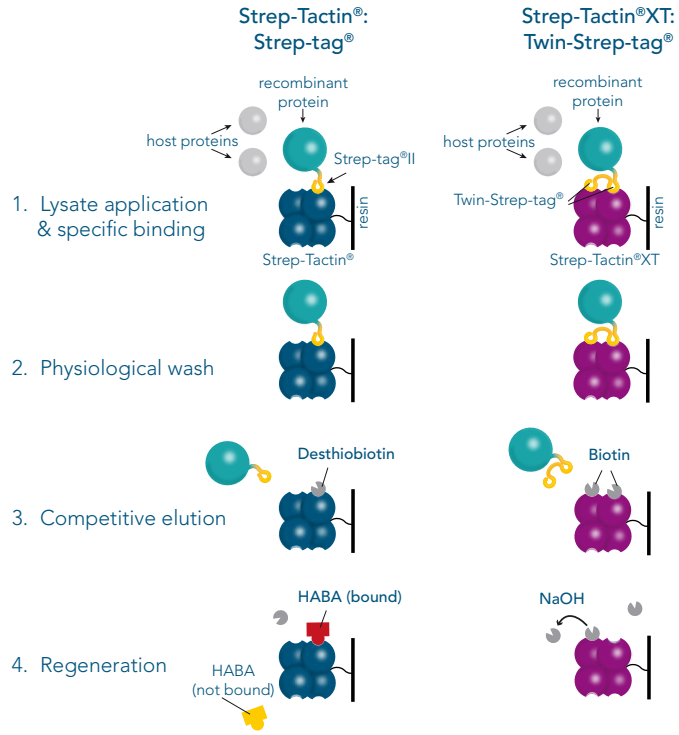
The Strep-tag® System

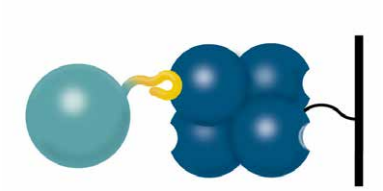
PURIFICATION PROCEDURE OF STREP-TACTIN® AND STREP-TACTIN®XT

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

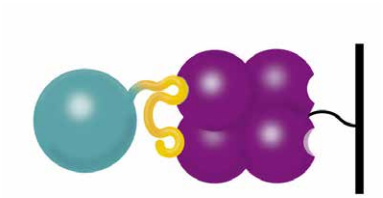
A comparison of purification via Strep-Tactin® and Strep-Tactin®XT depicts two changes in the procedure. The first and second step (lysate application & wash) remain the same. But the elution and the regeneration streps are different for both systems. For elution from Strep-Tactin® desthiobiotin is used 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.

Two specificity conferring steps allow high purity:
- Specific binding of the Strep-tag® motif to Strep-Tactin® and Strep-Tactin®XT
- Competitive elution with des-thiobiotin 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

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.

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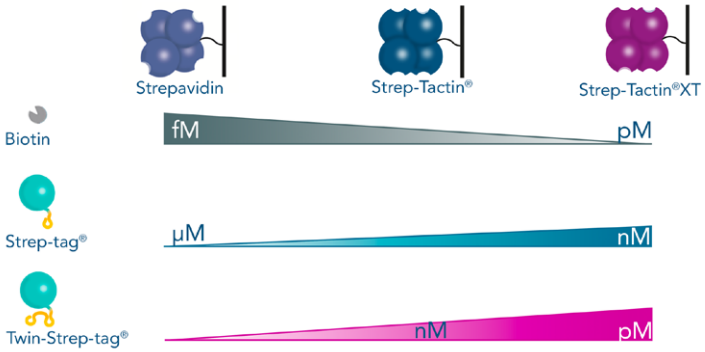
Visit our homepage for more:
www.iba-lifesciences.com/Strep-Tactin-vs-Strep-TactinXT.html

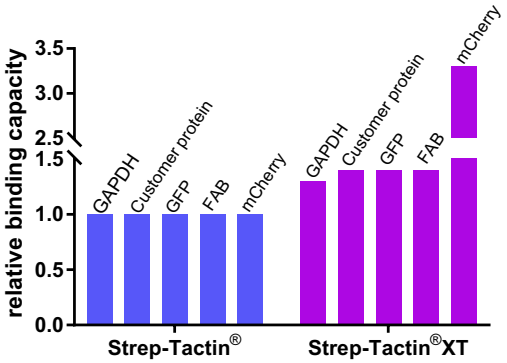
Binding affinities of the Strep-tag® components:



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

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.

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:His_6-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

		Strep-Tactin®		Strep-Tactin®XT	
Application and Conditions		**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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