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Cell Cycle related Antibodies

FtsZ antibodies (Cat # FtsZ-101AP, FITC-FtsZ, P-FtsZ and PC-FtsZ)

The bacterial cytokinetic protein FtsZ is a tubulin-like protein with GTPase activity and it plays an important role in cell division. The FtsZ protein is conserved throughout the bacteria and archaea where in response to an unknown cell division signal it polymerizes in to a ring which becomes the site of future cell division site. During cell division of *B. subtilis*, the frequency of cells with FtsZ rings varies 2-3-fold, however, the cellular concentration of FtsZ remain constant irrespective of doubling time (1). The FtsZ is expressed via a constitutive promoter thus eliminating the normal transcriptional control. The FtsZ undergo GTP-dependent polymerization in to medial FtsZ ring-formation and separation at cell poles is mediated by several protein partners. The MinCD complex is found concentrated at the cell poles where it inhibits the FtsZ polymerization (2). The FtsZ protein has GTPase activity which correlated with the FtsZ polymerization and FtsZ ring formation in rapid times of approximately 10 seconds (3). GTPase dependent polymerization of FtsZ is inhibited by SulA which is further purified as a fusion protein to MalE and staphylococcus protein A. The FtsZ deficient *B. subtilis* mutants are deficient in the initiation stages of cell division and exhibit long filament like growth when subjected to non-permissive temperature. The free energy of GTP hydrolysis appears not to be used for generation of constriction forces thus the role of GTPase activity in ring formation is still an open question (4).

The Z ring is a very dynamic structure through which subunits of FtsZ cycle with a half time of about 10 seconds. FtsZ is a GTPase that is similar to the eukaryotic tubulins and is essential for cell division in prokaryotes. FtsZ is capable of polymerizing in a GTP-driven process into structures similar to those formed by tubulin. FtsZ forms a ring-shaped septum just prior to cell division. *Staphylococcus aureus* FtsZ is a 390 amino acid protein with a nucleotide binding site and a SulA interaction site. Disruption in the activity of FtsZ in *S. aureus* affects its growth pattern and may be an important therapeutic target fight against staphylococcus infections,

The Anti-FtsZ-selective antibodies were generated against a synthetic peptide corresponding to a near C-terminal location on *S. aureus* protein. The FtsZ-selective antibodies are affinity purified against immobilized antigen based affinity chromatography which yielded high affinity epitope-specific antibodies. The FtsZ antibodies label a protein of approximately 47-48kDa protein in Western blot using Western blot positive control for FtsZ (PC-FtsZ). Anti-FtsZ-selective antibodies are also available in various conjugated forms (FITC and Rodamine) for confocal, Western blotting and immunocytochemical analyses. *FabGennix Inc.* will also conjugate antibodies with fluorescent probes upon request at extra charge. Limited quantities of antigenic peptide is also available (inquire before ordering). *FabGennix Inc.* also provides antibodies for epigenetics and, cell cycle-related research areas, for a complete listing of these products, please visit www.FabGennix.com. *FabGennix Int. Inc.*, will also provide Western blot positive controls for most of these antibodies in ready-to-use buffer for easy identification of respective proteins. Limited quantities of antigens are also available for blocking studies. Please inquire for their availability before ordering.

Catalog #	Host Species	Nature	Cross reactivity	Quantity
FtsZ-101 AP	Rabbit	Affinity purified FtsZ Antibody	Eukaryotic proteins	200ul
FITC-FtsZ	Rabbit	FITC-conjugated FtsZ antibody	n/a	5 appl
P-Rad30	n/a	Antigenic blocking peptide for FtsZ-101AP	n/a	250 mg
PC-FtsZ	n/a	Western blot positive control for FtsZ	n/a	For 5 applications

R = rat; M = mouse; H = human; C = chicken; monk = monkey; Sh = sheep; B = bovine ; * not all variants are labeled equally

Immunogen: Synthetic peptide corresponding to amino acids 368-383 (ked dip sfi nrr eer), the peptide was amidated and conjugated to a carrier protein for preparation of antigen to generate antibodies in rabbit.

Concentration: FtsZ-101AP 0.67-0.98 mg/ml of antibody stabilization buffer.

Applications: FtsZ-101AP is tested for WB application at 1:500 dilution. Other applications for this antibody has not been tested. WB: > 1:500; IMM & i.p pull-down assays: n.d; IHC n.d (Antibody dilutions for this antibody is for reference only, investigators are expected to determine the optimal conditions).

Protocols: Standard protocol for various applications (WB, IMM, IHC) of this antibody can be obtained upon request. The specification sheet for FtsZ antibody will be supplied with each product. *FabGennix Inc.* strongly recommends investigators to optimize conditions for use of this antibody in their laboratories.

Storage: The antiserum is supplied in antibody stabilization buffer with 0.02% azide. The purified antibodies are isolated from immobilized antigen affinity column. The affinity pure antibodies are supplied as 0.5-1 mg/ml IgG in antibody stabilization buffer. For long-term storage of keep at -20°C. *FabGennix Inc.* does not recommend storage of very dilute antibody solutions unless they are prepared in specially formulated multi use antibody dilution buffer (Cat # DiluOBuffer). Working solutions of antibodies in DiluOBuffer should be filtered through 0.45µ filter after every use for long-term storage.

Notes: Now Western blots can easily be stripped and recycle using our specially formulated StripOBuffer (Cat # FGI-1989). This stripping buffer does not require heating or have any pungent smell.

References:

- Richard B. Weart and Petra Anne Levin. Growth Rate-Dependent Regulation of Medial FtsZ Ring Formation. *J Bacteriol.* 2003 May; 185(9): 2826-2834.
- Hu, Z., A. Mukherjee, S. Pichoff, and J. Lutkenhaus. 1999. The MinC component of the division site selection system in *Escherichia coli* interacts with FtsZ to prevent polymerization. *Proc. Natl. Acad. Sci. USA* 96:14819-14824.
- Anderson, D. E., F. J. Gueiros-Filho, and H. P. Erickson. 2004. Assembly dynamics of FtsZ rings in *Bacillus subtilis* and *Escherichia coli* and effects of FtsZ-regulating proteins. *J. Bacteriol.* 186:5775-5781.
- Alex Dajkovic, Amit Mukherjee, and Joe Lutkenhaus. Investigation of Regulation of FtsZ Assembly by SulA and Development of a Model for FtsZ Polymerization. *J Bacteriol.* 2008 April; 190(7): 2513-2526.

* For users who may require large amounts of FtsZ-101AP, please enquire about bulk material discounts.

This Product is for Research Use Only and is NOT intended for use in humans or clinical diagnosis.

122808-0020SF1001Z-rev10.00

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