

Technical Data Sheet

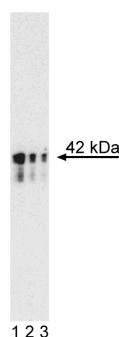
Purified Mouse anti-Mouse Nanog

Product Information

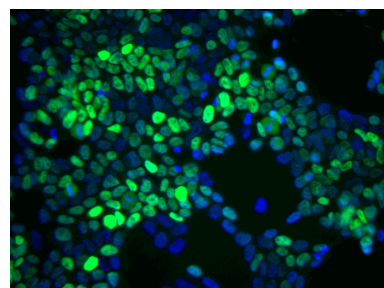
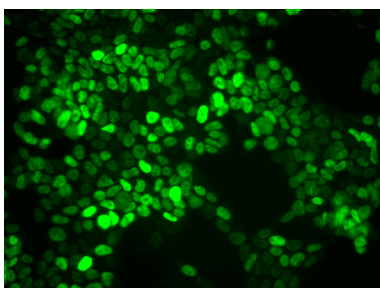
Material Number:	560259
Size:	0.1 mg
Concentration:	0.5 mg/ml
Clone:	M55-312
Immunogen:	Mouse Nanog Recombinant Protein
Isotype:	Mouse (BALB/c) IgG1, κ
Reactivity:	QC Tested: Mouse
Target MW:	42 kDa
Storage Buffer:	Aqueous buffered solution containing ≤0.09% sodium azide.

Description

The M55-312 monoclonal antibody reacts with mouse Nanog (named for Tir Na Nog, the land of the ever-young of Celtic mythology), which is a homeobox transcription factor required for the maintenance of the undifferentiated state of pluripotent stem cells. Nanog expression counteracts the differentiation-promoting signals induced by the extrinsic factors LIF (Leukemia Inhibitory Factor) and BMP (Bone Morphogenic Protein). When Nanog expression is down-regulated, cell differentiation can proceed. Proteins that regulate Nanog expression include transcription factors Oct4, SOX2, FoxD3, and Tcf3 and tumor suppressor p53.



Western blot analysis of anti-mouse Nanog. Mouse embryonic stem cell lysate E14 12.5 µg/lane was probed with the Nanog monoclonal antibody at the following concentrations: 2.0 (lane 1), 1.0 (lane 2), and 0.5 µg/ml (lane 3). Nanog is identified as a 42 KDa band.



Immunofluorescent staining of mouse embryonic stem (ES) cell line. ES-E14TG2a cells (ATCC CRL-1821) were seeded in a 96-well imaging plate (Cat. No. 353219) at ~10,000 cells per well. After overnight incubation, the cells were fixed, permeabilized with Triton™ X-100, and stained with Mouse anti-Mouse Nanog antibody according to the Recommended Assay Procedure. The second step reagent was Alexa Fluor® 555 goat anti-mouse Ig (Invitrogen) (pseudo colored green). Cell nuclei were counterstained with Hoechst 33342 (pseudo colored blue). The images were captured on a BD Pathway™ 435 High-Content Bioimager System using a 20X objective and merged using BD AttoVision™ software. This antibody also stains F9 cells (mouse embryonal carcinoma, ATCC CRL-1720). It also worked with the Saponin and cold methanol fix/perme protocols (see Recommended Assay Procedure), however Saponin permeabilization resulted in higher background staining.

Preparation and Storage

The monoclonal antibody was purified from tissue culture supernatant or ascites by affinity chromatography. Store undiluted at 4°C.

Application Notes

Application

Western blot	Routinely Tested
Bioimaging	Routinely Tested

Recommended Assay Procedure:

For more information, please refer to: http://www.bdbiosciences.com/pharmingen/protocols/Western_Blotting.shtml and Bioimaging: http://www.bdbiosciences.com/pharmingen/protocols/Bioimaging_Certified.shtml

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Recommended Protocol for Bioimaging:

1. Seed the cells in appropriate culture medium at an appropriate cell density in a BD Falcon™ 96-well Imaging Plate (Cat. No. 353219), and culture overnight to 48 hours.
2. Remove the culture medium from the wells, and wash (one to two times) with 100 µl of 1× PBS.
3. Fix the cells by adding 100 µl of fresh 3.7% Formaldehyde in PBS or BD Cytotfix™ fixation buffer (Cat. No. 554655) to each well and incubating for 10 minutes at room temperature (RT).
4. Remove the fixative from the wells, and wash the wells (one to two times) with 100 µl of 1× PBS.
5. Permeabilize the cells using either cold methanol (a), Triton™ X-100 (b), or Saponin (c):
 - a. Add 100 µl of -20°C 90% methanol or -20°C BD™ Phosflow Perm Buffer III (Cat. No. 558050) to each well and incubate for 5 minutes at RT.
 - b. Add 100 µl of 0.1% Triton™ X-100 to each well and incubate for 5 minutes at RT.
 - c. Add 100 µl of 1× Perm/Wash buffer (Cat. No. 554723) to each well and incubate for 15 to 30 minutes at RT. Continue to use 1× Perm/Wash buffer for all subsequent wash and dilutions steps.
6. Remove the permeabilization buffer from the wells, and wash one to two times with 100 µl of appropriate buffer (either 1× PBS or 1× Perm/Wash buffer, see step 5.c.).
7. Optional blocking step: Remove the wash buffers, and block the cells by adding 100 µl of blocking buffer BD Pharmingen™ Stain Buffer (FBS) (Cat. No. 554656) or 3% FBS in appropriate dilution buffer to each well and incubating for 15 to 30 minutes at RT.
8. Dilute the antibody to its optimal working concentration in appropriate dilution buffer. Titrate purified (unconjugated) antibodies and second-step reagents to determine the optimal concentration. If using a Bioimaging Certified antibody conjugate, dilute it 1:10.
9. Add 50 µl of diluted antibody per well and incubate for 60 minutes at RT. Incubate in the dark if using fluorescently labeled antibodies.
10. Remove the antibody, and wash the wells three times with 100 µl of wash buffer. An optional detergent wash (100 µl of 0.05% Tween in 1× PBS) can be included prior to the regular wash steps.
11. If the antibody being used is fluorescently labeled, then move to step 12. Otherwise, if using a purified unlabeled antibody, repeat steps 8 to 10 with a fluorescently labeled second-step reagent to detect the purified antibody.
12. After the final wash, counter-stain the nuclei by adding 100 µl of a 2 µg/ml solution of Hoechst 33342 (eg, Sigma-Aldrich Cat. No. B2261) in 1× PBS to each well at least 15 minutes before imaging.
13. View and analyze the cells on an appropriate imaging instrument.

Suggested Companion Products

Catalog Number	Name	Size	Clone
353219	BD Falcon™ 96-well Imaging Plate	NA	(none)
554655	Fixation Buffer	100 ml	(none)
554723	Perm/Wash Buffer	100 ml	(none)
558050	Perm Buffer III	125 ml	(none)

Product Notices

1. Please refer to www.bdbiosciences.com/pharmingen/protocols for technical protocols.
2. For fluorochrome spectra and suitable instrument settings, please refer to our Multicolor Flow Cytometry web page at www.bdbiosciences.com/colors.
3. Triton is a trademark of the Dow Chemical Company.
4. Caution: Sodium azide yields highly toxic hydrazoic acid under acidic conditions. Dilute azide compounds in running water before discarding to avoid accumulation of potentially explosive deposits in plumbing.

References

Chambers I. The molecular basis of pluripotency in mouse embryonic stem cells. *Cloning Stem Cells*. 2004; 6(4):386-391. (Biology)

Chambers I, Colby D, Robertson M, et al. Functional expression cloning of Nanog, a pluripotency sustaining factor in embryonic stem cells. *Cell*. 2003; 113:643-655. (Biology)

Mitsui K, Tokuzawa Y, Itoh H, et al. The homeoprotein Nanog is required for maintenance of pluripotency in mouse epiblast and ES cells. *Cell*. 2003; 113:631-642. (Biology)

Pan G, Thomson JA. Nanog and transcriptional networks in embryonic stem cell pluripotency. *Cell Res*. 2007; 17:42-49. (Biology)

Sun Y, Li H, Yang H, Rao MS, Zhan M. Mechanisms controlling embryonic stem cell self-renewal and differentiation. *Crit Rev Eukaryot Gene Expr*. 2006; 16(3):211-231. (Biology)

Suzuki A, Raya A, Kawakami Y, et al. Nanog binds to Smad1 and blocks bone morphogenetic protein-induced differentiation of embryonic stem cells. *Proc Natl Acad Sci U S A*. 2006; 103(27):10294-10299. (Biology)

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