

# Cytokines

## Human Recombinant Activin A



Scientists Helping Scientists™ | [WWW.STEMCELL.COM](http://WWW.STEMCELL.COM)

TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

[INFO@STEMCELL.COM](mailto:INFO@STEMCELL.COM) • [TECHSUPPORT@STEMCELL.COM](mailto:TECHSUPPORT@STEMCELL.COM)

FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

### Activin A

|           |         |         |
|-----------|---------|---------|
| Catalog # | 78001   | 10 µg   |
|           | 78001.1 | 100 µg  |
|           | 78001.3 | 500 µg  |
|           | 78001.2 | 1000 µg |

## Product Description

Activin A is a member of the transforming growth factor beta (TGF- $\beta$ ) family of proteins produced by many cell types throughout development (Gurdon et al.). It is a disulfide-linked homodimer (two beta-A chains) that binds to heteromeric complexes of a type I (Act RI-A and Act RI-B) and a type II (Act RII-A and Act RII-B) serine-threonine kinase receptor (Attisano et al.). Activins primarily signal through SMAD2/3 proteins to regulate a variety of functions, including cell proliferation, differentiation, wound healing, apoptosis, and metabolism (McDowell et al.). Activin A maintains the undifferentiated state of human embryonic stem cells (James et al.; Xiao et al.) and also facilitates differentiation of human embryonic stem cells into definitive endoderm (D'Amour et al.).

## Product Information

|                           |                                                                                                                                       |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Alternative Names:        | Activin beta-A chain, EDF, Erythroid differentiation protein, FRP, FSH-releasing protein, INHBA, Inhibin beta-A chain, Inhibin beta-1 |
| Accession Number:         | P08476                                                                                                                                |
| Amino Acid Sequence:      | MGLECDGKVN ICCKKQFFVS FKDIGWNDWI IAPSGYHANY CEGECPSHIA GTSGSSLSFH STVINHYRMR GHSPFANLKS CCVPTKL RPM SMLYDDGQN IIKKDIQNMI VEECGCS      |
| Predicted Molecular Mass: | 26.2 kDa                                                                                                                              |
| Species:                  | Human                                                                                                                                 |
| Cross Reactivity:         | Mouse, Rat                                                                                                                            |
| Formulation:              | Lyophilized from a sterile-filtered solution containing 0.1% trifluoroacetic acid.                                                    |
| Source:                   | E. coli                                                                                                                               |

## Specifications

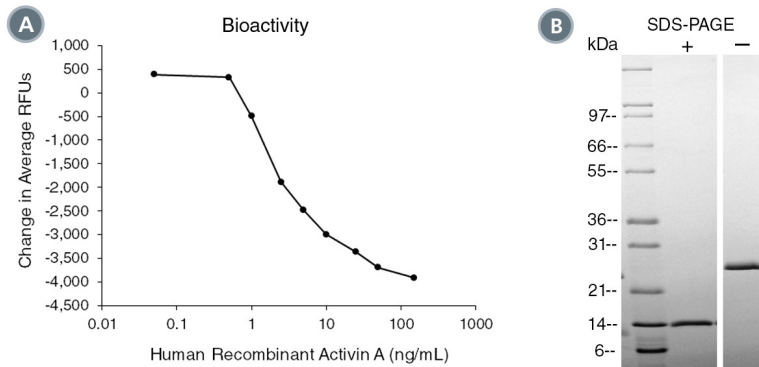
|                  |                                                                                                                                                           |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Activity:        | The specific activity is $\geq 1 \times 10^5$ units/mg ( $EC_{50} \leq 10$ ng/mL) as determined by the ability to induce cytotoxicity using MPC-11 cells. |
| Purity:          | $\geq 95\%$                                                                                                                                               |
| Endotoxin Level: | Measured by kinetic Limulus amoebocyte lysate (LAL) analysis and is $\leq 1$ EU/ $\mu$ g protein.                                                         |

## Preparation and Storage

|              |                                                                                                                                                                      |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage:     | Store at -20°C to -80°C.                                                                                                                                             |
| Stability:   | Stable as supplied for 12 months from date of receipt.                                                                                                               |
| Preparation: | Centrifuge vial before opening. Reconstitute the product in sterile water to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. |

OPTIONAL: After reconstitution, if product will not be used immediately, dilute with concentrated bovine serum albumin (BSA) to a final BSA concentration of 0.1%. The effect of storage of stock solution on product performance should be tested for each application. As a general guide, do not store at 2 - 8°C for more than 1 month or at -20°C to -80°C for more than 3 months. Avoid repeated freeze-thaw cycles.

## Data



(A) The biological activity of Human Recombinant Activin A was tested by its ability to induce cytotoxicity of MPC-11 cells. Cytotoxicity was measured after 48 hours of culture using a fluorometric assay method. The EC50 is defined as the effective concentration of the growth factor at which cell death is at 50% of maximum. The EC50 in the above example is 1.9 - 2.9 ng/mL.

(B) 1 µg of Human Recombinant Activin A was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions visualized by Coomassie Blue staining. Human Recombinant Activin A is a homodimer with a predicted molecular mass of 26.2 kDa.

## Related Products

For a complete list of cytokines, as well as related products available from STEMCELL Technologies, visit [www.stemcell.com/cytokines](http://www.stemcell.com/cytokines) or contact us at [techsupport@stemcell.com](mailto:techsupport@stemcell.com).

## References

- Attisano L et al. (1996) Activation of signalling by the activin receptor complex. *Mol Cell Biol* 16(3): 1066–73.
- D'Amour KA et al. (2005) Efficient differentiation of human embryonic stem cells to definitive endoderm. *Nat Biotechnol* 23(12): 1534–41.
- Gurdon JB et al. (1994) Activin signalling and response to a morphogen gradient. *Nature* 371(6497): 487–92.
- James D et al. (2005) TGFbeta/activin/nodal signaling is necessary for the maintenance of pluripotency in human embryonic stem cells. *Development* 132(6): 1273–82.
- McDowell N et al. (1997) Activin has direct long-range signalling activity and can form a concentration gradient by diffusion. *Curr Biol* 7(9): 671–81.
- Xiao L et al. (2006) Activin A maintains self-renewal and regulates fibroblast growth factor, Wnt, and bone morphogenic protein pathways in human embryonic stem cells. *Stem Cells* 24(6): 1476–86.

STEMCELL TECHNOLOGIES INC.'S QUALITY MANAGEMENT SYSTEM IS CERTIFIED TO ISO 13485. PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES UNLESS OTHERWISE STATED.

Copyright © 2017 by STEMCELL Technologies Inc. All rights reserved including graphics and images. STEMCELL Technologies & Design, STEMCELL Shield Design, and Scientists Helping Scientists are trademarks of STEMCELL Technologies Canada Inc. All other trademarks are the property of their respective holders. While STEMCELL has made all reasonable efforts to ensure that the information provided by STEMCELL and its suppliers is correct, it makes no warranties or representations as to the accuracy or completeness of such information.