



# Recombinant Proteins

GenScript's variety of recombinant protein expression platforms can offer fast production and delivery of high quality recombinant proteins, we have delivered over 400 cytokines, chemokines, and growth factors, all have been produced in *E.coli*, yeast, insect, or mammalian cells, and highly purified with excellent lot-to-lot consistency, biologically active, and significantly low endotoxin levels.

Learn more about recombinant proteins, please visit our website:  
[http://www.genscript.com/recombinant\\_proteins.html](http://www.genscript.com/recombinant_proteins.html)

Applications
Cell Activity Test
Functional Assays
Cell Culture
Immunoassay

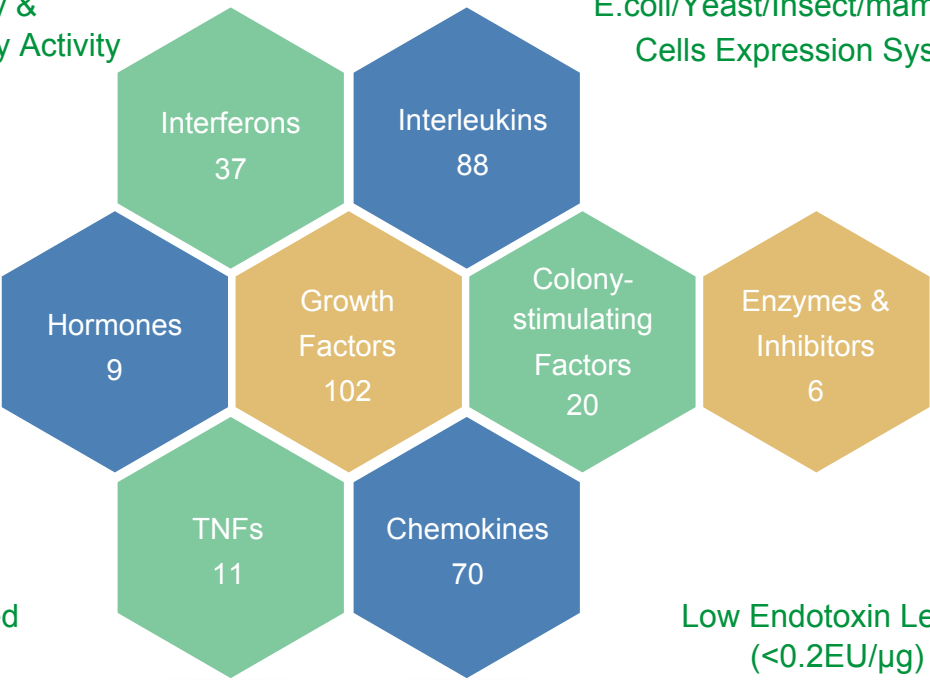
Highlights
High Purity & Activity
Excellent lot-to-lot consistency
Tested for high biological activity
Additive-free freezedrying technology
Low endotoxin levels
Customized quantities available

High Purity &  
Biologically Activity

*E.coli*/Yeast/Insect/mammalian  
Cells Expression System

Customized  
Quantities

Low Endotoxin Levels  
(<0.2EU/μg)



## Featured Products

### Cytokines & Growth Factors

Catalog	Name	Source
Z02913	BMP-2, Human	<i>E. coli</i>
Z00333	EGF, Human	<i>E. coli</i>
Z03066	EGF, Rat	<i>E. coli</i>
Z02975	EPO, Human	<i>CHO</i>
Z03011	FGF-18, Human	<i>E. coli</i>
Z03207	FGF-21, His, Human	<i>CHO</i>
Z03290	FGF-21, Mouse	<i>E. coli</i>
Z02980	G-CSF, Human	<i>CHO</i>
Z03012	GH, Human	<i>E. coli</i>
Z02983	GM-CSF, Human	<i>CHO</i>
Z02979	GM-CSF, Mouse	<i>CHO</i>
Z03003	IFN- $\alpha$ 2a, Human	<i>E. coli</i>
Z02986	IFN- $\gamma$ , Human	<i>CHO</i>
Z02916	IFN- $\gamma$ , Mouse	<i>E. coli</i>
Z03017	IGF-I, Human	<i>E. coli</i>
Z03169	IL-1 RA, Human	<i>HEK 293</i>
Z03121	IL-10, Human	<i>CHO</i>
Z03228	IL-17A, His, Human	<i>CHO</i>
Z02922	IL-1 $\beta$ , Human	<i>E. coli</i>
Z02988	IL-1 $\beta$ , Mouse	<i>CHO</i>

Catalog	Name	Source
Z02925	IL-4, Human	<i>CHO</i>
Z02996	IL-4, Mouse	<i>CHO</i>
Z02981	IL-5, Human	<i>CHO</i>
Z03262	IL-8 (77aa)/CXCL8, Human	<i>E. coli</i>
Z02971	IP-10/CXCL10, Human	<i>E. coli</i>
Z02924	M-CSF, Human	<i>CHO</i>
Z02930	M-CSF, Mouse	<i>CHO</i>
Z03010	M-CSF, Rat	<i>CHO</i>
Z02529	PDGF-BB, Human	<i>P. pastoris</i>
Z03096	PDGF-BB, Mouse	<i>E. coli</i>
Z02692	SCF, Human	<i>P. pastoris</i>
Z02997	SCF, Mouse	<i>P. pastoris</i>
Z03069	Shh (C24IVI), Human	<i>E. coli</i>
Z03050	Shh (C25II), Mouse	<i>E. coli</i>
Z02684	TNF- $\alpha$ , His, Mouse	<i>E. coli</i>
Z01001	TNF- $\alpha$ , Human	<i>E. coli</i>
Z03133	TWEAK, Human	<i>CHO</i>
Z02690	VEGF164, Mouse	<i>P. pastoris</i>
Z02689	VEGF165, Human	<i>P. pastoris</i>
Z03073	VEGF165, Human	<i>HEK 293</i>

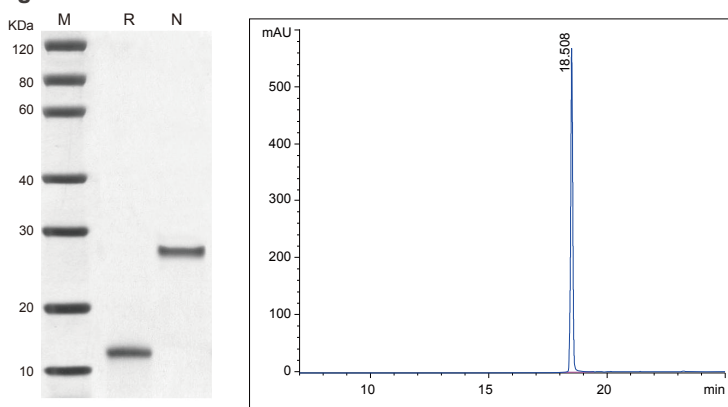
### Enzymes

Catalog	Name	Source
Z03004	Enterokinase, His, Bovine	<i>P. pastoris</i>
Z03376	Enterokinase, His, Bovine (Lyophilized)	<i>P. pastoris</i>
Z01003	Enterokinase, His, Porcine	<i>P. pastoris</i>
Z02199	Enterokinase, His, Porcine (Lyophilized)	<i>P. pastoris</i>

Catalog	Name	Source
Z02799	3C protease, GST	<i>E. coli</i>
Z03092	3C protease, His	<i>E. coli</i>
Z02798	TEV Protease, GST	<i>E. coli</i>
Z03030	TEV Protease, His	<i>E. coli</i>

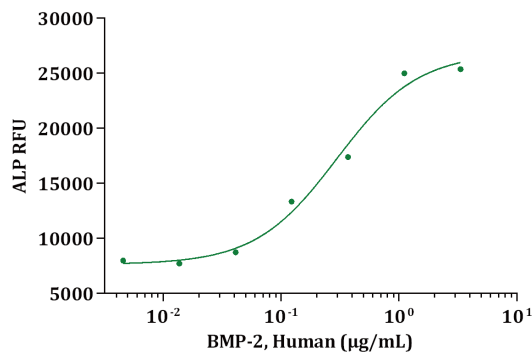
## High Purity

**Fig.1**

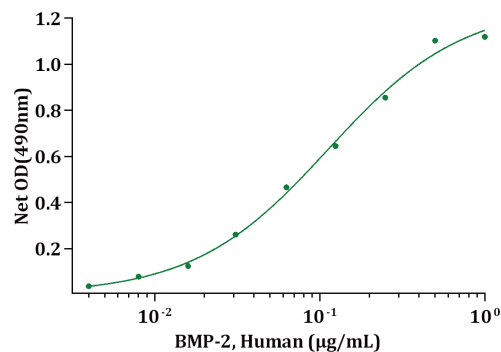


2  $\mu$ g of BMP-2, Human (Cat. No. Z02913) was resolved with SDS-PAGE under reducing (R) and non-reducing (N) conditions and visualized by Coomassie Blue staining (Left). The purity is > 98% determined by RP-HPLC (Right)

Fig.2A

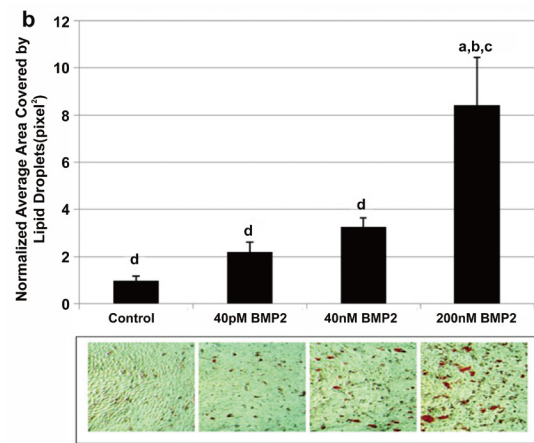
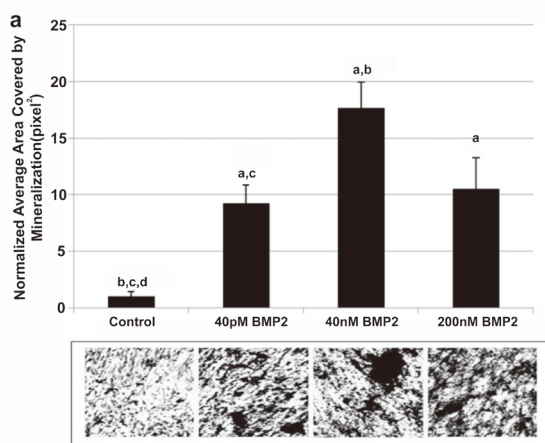


BMP-2, Human (Cat. No. Z02913) induce alkaline phosphatase production by C2C12 cells. The  $ED_{50}$  for this effect is typically 0.10-0.80 µg/mL.



BMP-2, Human (Cat. No. Z02913) induce alkaline phosphatase production by ATDC5 cells. The  $ED_{50}$  for this effect is typically 0.07-0.20 µg/mL.

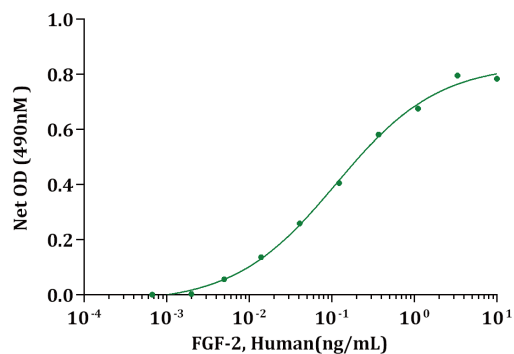
Fig.2B\*



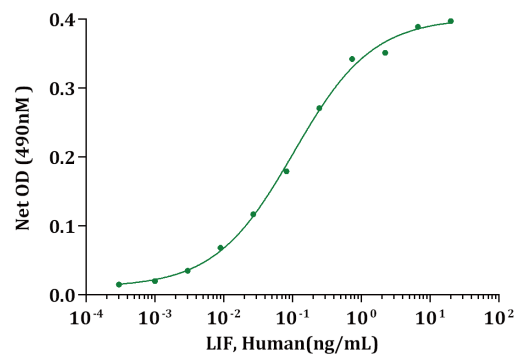
C2C12 cells were treated equally between experiments with 40 pM, 40 nM and 200 nM of BMP2. Mineral deposits and lipid droplet formation were used as defined end points to describe osteoblastic or adipogenic phenotypes, respectively. BMP2 induced osteogenesis independent of concentration(a) and adipogenesis(b).

\*The data is from a customer's paper.<sup>[10]</sup>

Fig.2C

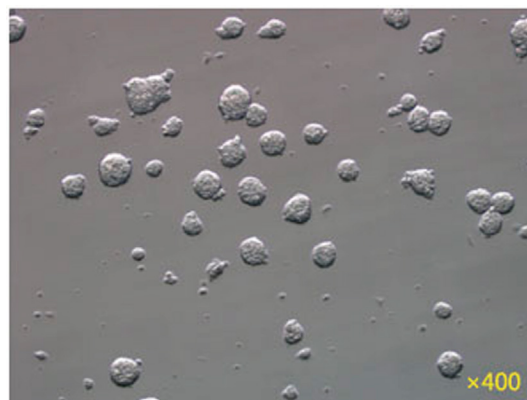
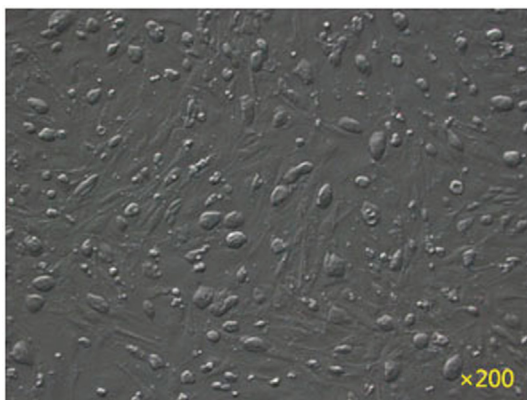


FGF-basic (154 aa), Human (Cat. No. Z03116) stimulates cell proliferation of Balb/3T3 cells. The  $ED_{50}$  for this effect is 0.1 ng/mL



LIF, Human (Cat. No. Z02681) stimulates cell proliferation of TF-1 cells. The  $ED_{50}$  for this effect is 0.09 ng/mL.

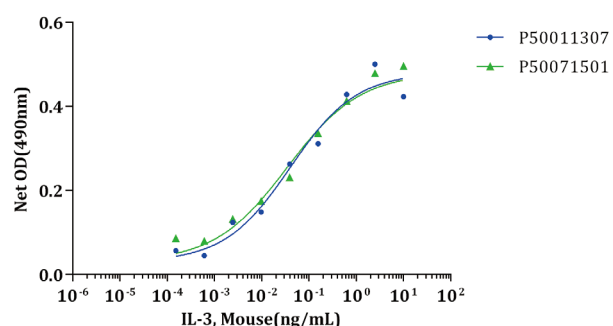
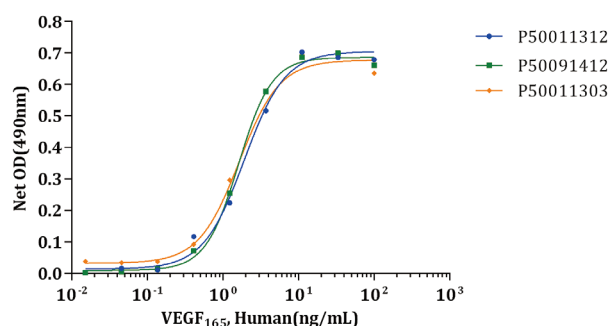
Fig.2D



Cultured mESC (left) and mNSC (right) by FGF-basic (154 aa), Human (Cat. No. Z03116) combined with LIF, Human (Cat. No. Z02681).

## Excellent lot-to-lot consistency

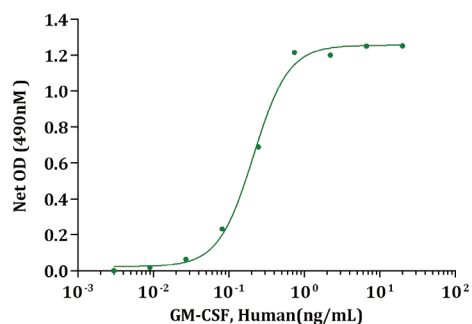
Fig.3



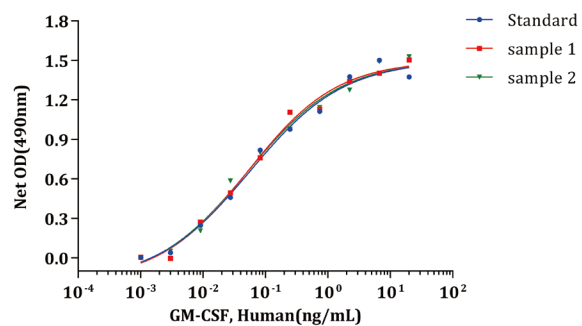
VEGF<sub>165</sub> Human (Cat. No. Z02689) and IL-3, Mouse (Cat. No. Z03111) showed almost the same ED<sub>50</sub> value between different lots.

## High Quality (Stored at RT for 1 month)

Fig.4



GM-CSF, Human (Cat. No. Z02695) stimulates cell proliferation of TF-1 cells. The ED<sub>50</sub> for this effect is less than 0.5 ng/mL.



Activity of GM-CSF, Human (Cat. No. Z02695). ED<sub>50</sub>=0.11 ng/mL has no significant change after stored at room temperature for 1 month.



## Citation

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(Enterokinase, His, Bovine, Cat. No. Z03004)
3. Pang SS, Berry R, Chen Z, *et al.* The structural basis for autonomous dimerization of the pre-T-cell antigen receptor. *Nature*. 2010, 467(7317):844-8. **IF:38.597**  
(Enterokinase, Porcine, Cat. No. Z02199)
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5. Glen F. Deleavey, Jonathan K. Watts, Tommy Alain, *et al.* Synergistic effects between analogs of DNA and RNA improve the potency of siRNA-mediated gene silencing. *Nucleic acids research*. 2010, 38(13):4547-57. **IF:8.278**  
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6. Sirois M, Robitaille L, Allary R, *et al.* Traf6 And Irf7 Control Hiv Replication In Macrophages. *PLoS One*. 2011, 6(11):e28125. **IF:3.7**  
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7. Gao X, Wan F, Mateo K, *et al.* Bacterial effector binding to ribosomal protein s3 subverts NF- $\kappa$ B function. *PLoS pathogens*. 2009, 5(12):e1000708. **IF:8.136**  
(TNF- $\alpha$ , Mouse, *P. pastoris*-expressed, Cat. No. Z02918)
8. Wang Y, Thomson CA, Allan LL, *et al.* Characterization of pathogenic human monoclonal autoantibodies against GM-CSF. *Proceedings of the National Academy of Sciences of the United States of America*. 2013, 110(19):7832-7. **IF:9.737**  
(GM-CSF, Human, Cat. No. Z00349)
9. Bouchlaka MN, Sckisel GD, Chen M, *et al.* Aging predisposes to acute inflammatory induced pathology after tumor immunotherapy. *The Journal of experimental medicine*. 2013, 210(11):2223-37. **IF:13.214**  
(GM-CSF, Human, Cat. No. Z00349)
10. Moseychuk, O., Akkiraju, H., Dutta, J., *et al.* Inhibition of CK2 binding to BMPRIa induces C2C12 differentiation into osteoblasts and adipocytes. *Journal of cell communication and signaling*. 2013, 7(4):265-278.  
(BMP-2, Human, Cat. No. Z02913)