9051 Mira Mesa Blvd, #910094
San Diego, CA 92191
Tel: 760-390-3989

ACVR1 Human

Activin A Receptor Type 1 Human Recombinant
GRF0009

Product Overview

Name	ACVR1 Human
Description	
Activin A Receptor Type 1 Human Recombinant	
Accession (Primary)	Q04771
Synonyms	
ACVR1A, ALK2, ACVR1, ACTRI, ACTR-I, ACVRLK2, FOP, SKR1, TSRI, Activin receptor type I, Activin receptor-like kinase 2, ALK-2, TSR-I, Serine/threonine-protein kinase receptor R1, TGF-B superfamily receptor type I.	
Introduction	
Activin A Receptor Type 1 (ACVR1) is a member of TGF-beta serine/threonine kinase receptor family. ACVR1 forms a receptor complex contains2 type II and 2 type I transmembrane serine/threonine kinases. Type II receptors phosphorylate and activate type I receptors which autophosphorylate,bind and activate SMAD transcriptional regulators. ACVR1 takes part in left-right pattern formation during embryogenesis and is also essential in the BMP pathway which is responsible for the development and repair of the skeletal system.ACVR1 is linked to Fibrodysplasia Ossificans Progressiva which isknown for the formation of heterotopic bone throughout the body.	
Source	
Sf9, Baculovirus cells.	
Physical Appearance	
Sterile filtered colorless solution.	
Formulation	
ACVR1 protein solution (0.25mg/ml) contains Phosphate Buffered Saline (pH 7.4) and 10% glycerol.	
Stability	
Store at 4°C if entire vial will be used within 2-4 weeks. Store, frozen at -20°C for longer periods of time. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Avoid multiple freeze-thaw cycles.	
Purity	
Greater than 90.0% as determined by SDS-PAGE.	
Amino acid sequence	
MEDEKPKVNP KLYMCVCEGL SCGNEDHCEG QQCFSSLSIN DGFHVYQKGC FQVYEQGKMT CKTPPSPGQA VECCQGDWCN RNITAQLPTK GKSFPGTQNF HLE LEPKSCD KTHTCPPCPA PELLGGPSVF LFPPKPKDTL	

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MISRTPEVTC VVVDVSHEDP EVKFNWYVDG VEVHNAKTKP REEQYNSTYR VVSVLTVLHQ DWLNGKEYKC KVSNKALPAP IEKTISKAKG QPREPQVYTL PPSRDELTKN QVSLTCLVKG FYPSDIAVEW ESNGQPENNY KTTPPVLDSD GSFFLYSKLT VDKSRWQQGN VFSCSVMHEA LHNHYTQKSL SLSPGKHHHH HH .

Background

Functional Implications and Therapeutic Prospects of Activin A Receptor Type 1 Human Recombinant 1. Abstract This study illuminates the functional roles and potential therapeutic applications of Activin A Receptor Type 1 Human Recombinant (ACVR1), a crucial protein in the TGF-beta superfamily signaling pathway. Through a comprehensive review of its structure, signaling mechanism, biological functions, and disease associations, this paper aims to elucidate the current understanding of ACVR1 and its potential therapeutic implications in various disease states. 2. Introduction The Activin A Receptor Type 1 Human Recombinant, abbreviated as ACVR1, is a receptor protein vital for transmitting cellular signals in the Transforming Growth Factor-beta (TGF-beta) superfamily pathway. Known to play pivotal roles in organogenesis, bone growth, and cell differentiation, the ACVR1 and its functions present vast therapeutic potential. 3. Structure and Signaling of ACVR1 ACVR1 is a transmembrane serine/threonine kinase receptor, characterized by an extracellular ligand-binding domain and an intracellular kinase domain for signal transduction. Binding of ligands such as Activin A leads to the formation of heteromeric complexes with type II receptors, triggering phosphorylation events that activate downstream signaling pathways. 4. Biological Functions of ACVR1 Being a part of the TGF-beta superfamily signaling pathway, ACVR1 is implicated in a broad spectrum of biological processes. It is crucial for embryonic development, cellular proliferation, differentiation, apoptosis, and homeostasis. It also plays a significant role in bone morphogenesis, contributing to skeletal patterning and growth. 5. ACVR1 in Disease Pathology The dysregulation of ACVR1 has been associated with various pathological conditions, including Fibrodysplasia Ossificans Progressiva (FOP), a rare genetic disorder characterized by progressive ossification of soft tissues. Mutations in ACVR1 lead to enhanced BMP signaling, causing aberrant bone formation. This highlights the critical role of ACVR1 in skeletal homeostasis and disease. 6. Therapeutic Potential of ACVR1 Given the central role of ACVR1 in cellular signaling and its association with disease, it presents a promising target for therapeutic intervention. Strategies to modulate ACVR1 signaling could potentially ameliorate symptoms of diseases like FOP, offering promising avenues for novel therapeutic approaches. 7. Conclusion and Future Perspectives While our understanding of ACVR1's functional roles has expanded significantly over the years, much remains to be elucidated. Further research into the precise molecular mechanisms of ACVR1 and its pathway will pave the way for therapeutic advances, enhancing our capability to combat various diseases.

Precautions

ACVR1 Human is for research use only and not for use in diagnostic or therapeutic procedures.

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