9051 Mira Mesa Blvd, #910094
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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	
ACVR2A, ACTRIIA, ACTR-IIA,	
Introduction	
ACVR2A takes part in various biological processes including mesoderm induction, neural cell differentiation, bone remodeling, hematopoiesis, carcinogenesis, and inflammation. ACVR2A which is a receptor for Actv A, Actv B and inhibin A mediates induction of adipogenesis by GDF6.	
Source	
Sf9, Baculovirus cells.	
Physical Appearance	
Sterile Filtered colorless solution.	
Formulation	
ACVR2A protein solution (0.5mg/ml) containing 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 95% as determined by SDS-PAGE.	
Amino acid sequence	
AILGRSETQE CLFFNANWEK DRTNQTGVEP CYGDKDKRRH CFATWKNISG SIEIVKQGCW LDDINCYDRT DCVEKKDSPE VYFCCCEGNM CNEKFSYFPE MEVTQPTSNP VTPKPP LEHH HHHH.	
Background	
A Comprehensive Examination of the Activin Receptor Type 2A Human Recombinant: Biological Functions and Therapeutic Possibilities 1. Abstract This paper delves into the complex world of Activin Receptor Type 2A Human Recombinant (ACVR2A), a crucial element of the Transforming Growth Factor-beta (TGF-beta) signaling pathway. The	

structure, biological implications, and signaling pathway of ACVR2A are all extensively reviewed. The potential for ACVR2A as a therapeutic target in various pathological conditions is also explored. 2. Introduction The ACVR2A, a receptor protein vital to the TGF-beta signaling pathway, plays a significant role in a multitude of biological processes, including embryogenesis, cell differentiation, and homeostasis. Understanding the intricate operations of ACVR2A could open the door to innovative therapeutic strategies. 3. Structure and Signaling of ACVR2A As a transmembrane serine/threonine kinase receptor, ACVR2A is characterized by a ligand-binding extracellular domain and an intracellular domain responsible for signal transduction. Upon binding of specific ligands like activin, ACVR2A interacts with type I receptors to trigger phosphorylation events, leading to the activation of downstream SMAD signaling pathways. 4. Biological Functions of ACVR2A ACVR2A plays a substantial role in a wide range of biological processes. These include embryonic development, cell differentiation, bone growth, immune responses, and homeostasis. Furthermore, ACVR2A is instrumental in follicle-stimulating hormone (FSH) regulation, highlighting its importance in reproduction. 5. ACVR2A in Disease Pathology Impairments in ACVR2A signaling have been linked to several diseases, including various cancers and reproductive disorders. Mutations in the ACVR2A gene have been implicated in tumor progression, underscoring the receptor's role in cell proliferation and differentiation. 6. Therapeutic Potential of ACVR2A The centrality of ACVR2A in critical biological processes and disease pathology suggests its therapeutic potential. By modulating ACVR2A signaling, it may be possible to intervene in diseases characterized by aberrant TGF-beta signaling. Additionally, ACVR2A antagonists are being studied for their potential in cancer treatment. 7. Conclusion and Future Perspectives Our comprehension of ACVR2A's functions has substantially increased in recent years, yet much remains to be discovered. Further research into ACVR2A's precise molecular mechanisms and involvement in disease will undoubtedly yield new therapeutic strategies.

Precautions

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

Target Information: (Q04771)

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.

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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.