# PDGF R alpha Protein, Rat (HEK293, His)

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| **Cat. No.:** | HY-P73721 |
| **Synonyms:** | Platelet-derived growth factor receptor alpha; PDGFR-alpha; PDGFR-2; CD140a; PDGFRA |
| **Species:** | Rat |
| **Source:** | HEK293 |
| **Accession:** | P20786 (L24-E523) |
| **Gene ID:** | 25267 |
| **Molecular Weight:** | Approximately 70-115 kDa due to glycosylation |

## PROPERTIES

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| **AA Sequence** | L L L P S I L P N E N E K I V P L S S S F S L R C F G E S E V S W Q H P M S E E<br>E D P N V E I R T E E N N S S L F V T V L E V V N A S A A H T G W Y T C Y Y N H<br>T Q T E E S E I E G R H I Y I Y V P D P D M A F V P L G M T D S L V I V E E D D<br>S A I I P C L T T D P D T E V T L H N N G R L V P A S Y D S R Q G F N G T F S V<br>G P Y I C E A T V R G R T F K T S E F N V Y A L K A T S E L N L E M D T R Q T V<br>Y K A G E T I V V T C A V F N N E V V D L Q W T Y P G E V R N K G I T M L E E I<br>K L P S I K L V Y T L T V P K A T V K D S G D Y E C A A R Q A T K E V K E M K T<br>V T I S V H E K G F V Q I R P T F G H L E T V N L H Q V R E F V V E V Q A Y P T<br>P R I S W L K D N L T L I E N L T E I T T D V Q R S Q E T R Y Q S K L K L I R A<br>K E E D S G H Y T I I V Q N D D D M K S Y T F E L S T L V P A S I L E L V D D H<br>H G S G G G Q T V R C T A E G T P L P N I E W M I C K D I K K C N N D T S W T V<br>L A S N V S N I I T E F H Q R G R S T V E G R V S F A K V E E T I A V R C L A K<br>N D L G I G N R E L K L V A P S L R S E |
| **Biological Activity** | Measured by its ability to inhibit the biological activity of PDGF-AA using NIH-3T3 mouse fibroblast cells. The $ED_{50}$ for this effect is 0.6932 μg/mL in the presence of 100 ng/mL recombinant human PDGF-AA, corresponding to a specific activity is $1.443\times10^3$ U/mg. |
| **Appearance** | Lyophilized powder |
| **Formulation** | Lyophilized from a 0.2 μm filtered solution of PBS, pH 7.4. |
| **Endotoxin Level** | <1 EU/μg, determined by LAL method. |
| **Reconsititution** | It is not recommended to reconstitute to a concentration less than 100 μg/mL in $ddH_2O$. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose). |
| **Storage & Stability** | Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage. |
| **Shipping** | Room temperature in continental US; may vary elsewhere. |

## DESCRIPTION

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| **Background** | PDGF R alpha protein, a tyrosine-protein kinase acting as a cell-surface receptor for PDGFA, PDGFB, and PDGFC, plays a pivotal role in the orchestration of embryonic development, cell proliferation, survival, and chemotaxis. Its multifaceted functions include both promotion and inhibition of cell proliferation and migration depending on the cellular context. PDGF R alpha is integral to the differentiation of bone marrow-derived mesenchymal stem cells, essential for normal skeletal development, and crucial for cephalic closure during embryonic development. Furthermore, it is indispensable for the development of the gastrointestinal tract mucosa, playing a role in recruiting mesenchymal cells and facilitating the normal development of intestinal villi. In the context of wound healing, PDGF R alpha contributes to cell migration and chemotaxis. Its involvement in platelet activation, secretion of agonists from platelet granules, and thrombin-induced platelet aggregation highlights its significance in hemostasis. Binding to its cognate ligands activates several signaling cascades, with the response modulated by ligand nature and heterodimer formation between PDGFRA and PDGFRB. PDGF R alpha phosphorylates PIK3R1, PLCG1, and PTPN11, leading to the activation of diverse signaling pathways, including AKT1, HRAS, and MAP kinases. Additionally, it promotes the activation of STAT family members, such as STAT1, STAT3, STAT5A, and/or STAT5B. Receptor signaling is tightly regulated by protein phosphatases and rapid internalization of the activated receptor. The intricate functions of PDGF R alpha underscore its crucial role in diverse physiological processes. |



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