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Succinate receptor in GtoPdb v.2025.3

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Abstract

Nomenclature as recommended by NC-IUPHAR [8]. The succinate receptor (GPR91, *SUCNR1*) is activated by the tricarboxylic acid (or Krebs) cycle intermediate succinate and other dicarboxylic acids with less clear physiological relevance such as maleate [17]. Since its pairing with its endogenous ligand in 2004, intense research has focused on the receptor-ligand pair role in various (patho)physiological processes such as regulation of renin production [17, 40], ischemia injury [17], fibrosis [26], retinal angiogenesis [35], inflammation [26, 24], immune response [33], obesity [45, 27, 21], diabetes [43, 22, 40], platelet aggregation [39, 37] or cancer [29, 47]. The succinate receptor is coupled to $G_{i/o}$ [11, 17] and $G_{q/11}$ protein families [32, 17, 41], whilst coupling to these G proteins is dependent on the cellular, metabolic and spatial context [23, 41]. Although the receptor is, upon ligand addition, rapidly desensitized [19, 32], and in some cells internalized [17], it seems to recruit arrestins weakly [10]. The cellular activation of the succinate receptor triggers various signalling pathways such as decrease of cAMP levels, $[Ca^{2+}]^i$ mobilization and activation of kinases (ERK, c-Jun, Akt, Src, p38, PI3Kβ, *etc.*) [12]. The receptor is broadly expressed but is notably abundant in immune cells (M2 macrophages [41, 21], monocytes [33], immature dendritic cells [33], adipocytes [45], platelets [39, 37], *etc.*) and in the kidney [17].

Contents

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