# Homo- and Heterodimerization of G protein coupled Chemokine receptors

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G protein coupled chemokine receptors are involved in cancer metastasis as well as HIV-infection and were observed to form homo- and heterodimers [1]. The receptors CXCR4, CCR2 and CCR5 were shown to homo- as well as heterodimerize and the receptor association was reported to regulate the proteins' function [2]. In addition, the presence of membrane cholesterol was observed to modulate receptor activity [3]. The dimerization of these chemokine receptors was studied in absence and presence of cholesterol using thousands of molecular dynamics simulations on the microsecond timescale.

Our data suggests that the closely related CC chemokine receptors (transmembrane sequence similarity of 91%) homodimerize in similar patterns distinct from CXCR4. In addition, cholesterol bound to corresponding spots on CC chemokine receptors (primarily TM6 and TM7), while different binding positions for cholesterol were observed for CXCR4 (mainly TM1 and TM7). The presence of cholesterol especially modulated the homo- and heterodimerization of CXCR4 by largely blocking TM1 from engaging in dimer interactions, but inducing dimer conformations including TM4 via intercalating at the dimer interface [4].

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