Assignment 2

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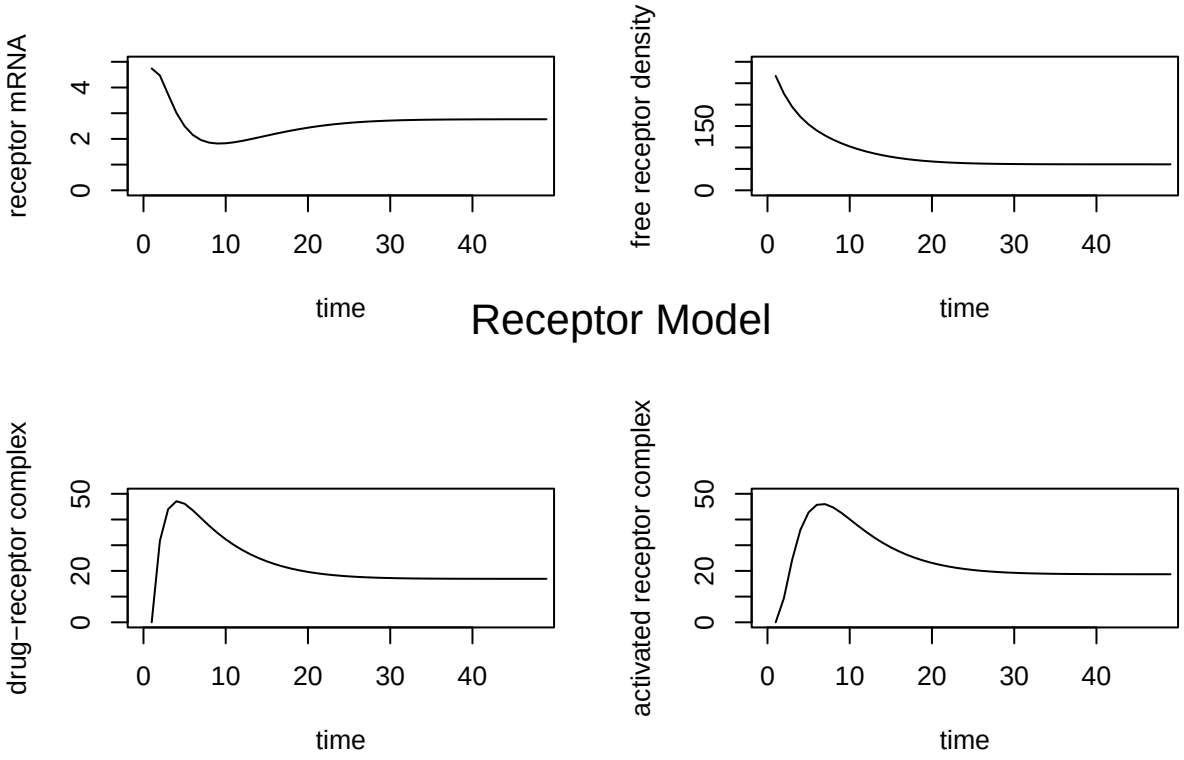
Week 2: Glucocorticoid receptor dynamica

Corticosteroids are hormones produced by the adrenal cortex or synthetic analogues of these natural hormones. They are needed to release and store energy, minerals and salts. Theyre the most effective drugs'for anti-inflammatory and hypersensitivity reactions. Corticosteroids bind intracellularly to the corticosteroid receptor, forming a complex that influences the expression of mRNA. This induces the synthesis of certain proteins. Corticosteroids are mainly divided into two types:

- Mineralocorticoids *mainly affect the water and salt balance.*
- Glucocorticoids *have an effect on carbohydrate, protein and fat metabolism.*

The production (synthesis) mRNA is constant and the degradation of mRNA is a ratio that depends on the amount of mRNA. The amount of mRNA in time change depends on what is being made and broken down. mRNA affects the receptor, more mRNA means more synthesis of the receptor. The same applies to degradation. The speed of binding is equal to the amount of product of the activity. What is bound to the MPL concentration is thus withdrawn from the free receptor concentration. A part also goes to the nucleus and this depends on the amount that is available. There is also a factor because some of it goes back and becomes available and affects the amount of free receptor concentration. But the synthesis can still be influenced with a repression factor by the drug complex.



The concentration of mRNA goes down as the concentration of the drug complex increases. The concentration of free receptor decreases until it is constant. Because it is high, the concentration of the drug complex and drug complex in the nucleus increases. At a certain point these concentrations are so high that there is too much of it and the concentration drops again until it is constant.

The concentration of drug complex in the nucleus is the most important, because it affects two variables. From here some free receptor goes back and is available. And it produces a factor (IC50_Rm). This affects the synthesis of mRNA.