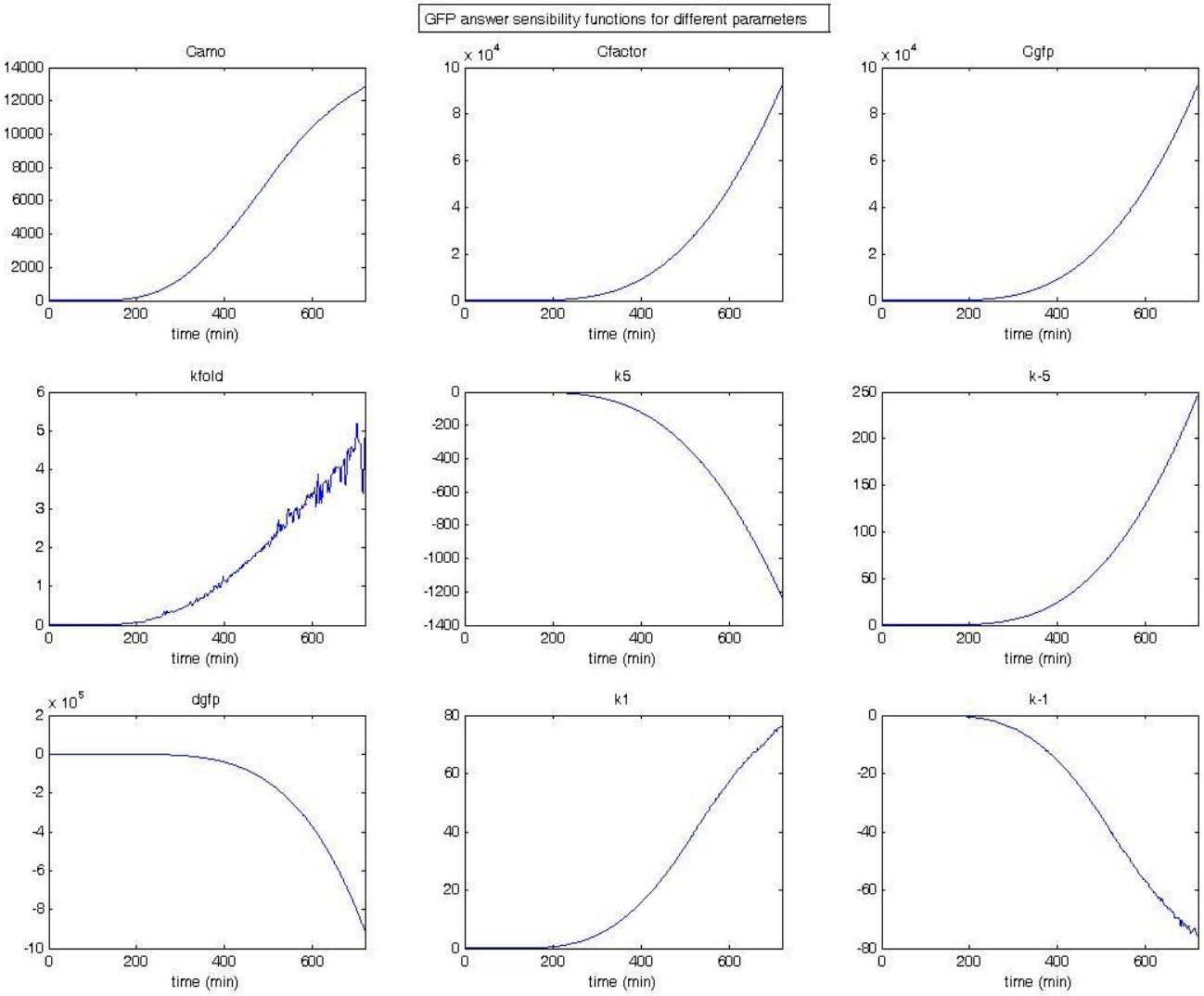
# SENSITIVITY ANALYSIS

We studied the effect of some parameters of our model in order to learn their role in our modeled system. Therefore, we used GFP answer sensitivity functions as a mathematical tool to study some of the most important rate constants: $mRNA_{amo}$ maximal transcription rate, $mRNA_{factor}$ maximal transcription rate, $mRNA_{GFP}$ maximal transcription rate, GFP formation rate, equilibrium $GFP_{mis}$-GFP constant forward rate, equilibrium $GFP_{mis}$-GFP constant reverse rate, GFP degradation rate, complex AMO:chloroform formation rate, complex AMO:chloroform reverse rate.



Looking at the plots, we note that GFP sensitivity function of all the parameters starts at least at a time performed of 200 minutes, likely because it is the time that the chloroform in bulk needs to enter the cells.

Function analysis for the three maximal transcription rates show obviously that the GFP answer growth fast as the constant rate values are higher. The fourth plot, which is the GFP answer function analysis of GFP formation rate, shows that even though GFP answer growth fast as the formation rate growth, it manifests some maximums and minimums, likely because of GFP protein has an equilibrium reaction with GFP protein misfolded. $k_5$ and $k\_5$ are, respectively, the equilibrium $GFP_{mis}$-GFP constant forward rate and the equilibrium $GFP_{mis}$-GFP constant reverse rate and obviously have an important role in the GFP concentration, which can be seen in the sensitivity functions. Another important kinetic constant is the degradation rate, $d_{GFP}$, to which the GFP answer has more sensibility, because it effects directly the GFP concentration and also because it is involved in a not reversible reaction.

The last two plots are, respectively, the GFP sensitivity functions of the complex AMO:chloroform formation rate and the complex AMO:chloroform reverse rate. They have the same effect on GFP, but with opposite value, which means that for the same increase in the rates values, the GFP answer would growth with the same but opposite velocity rates.