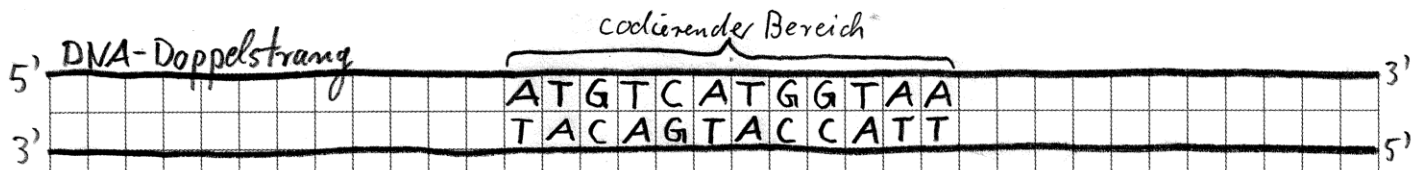
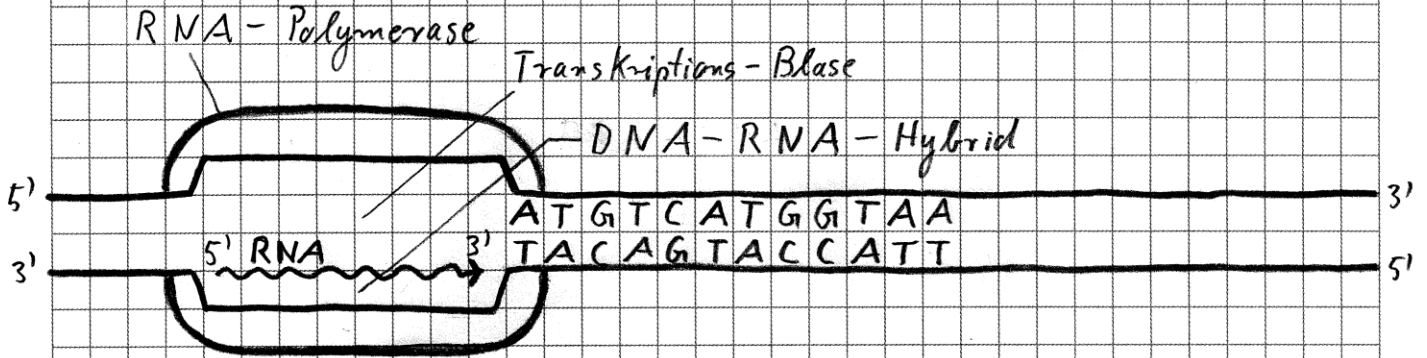


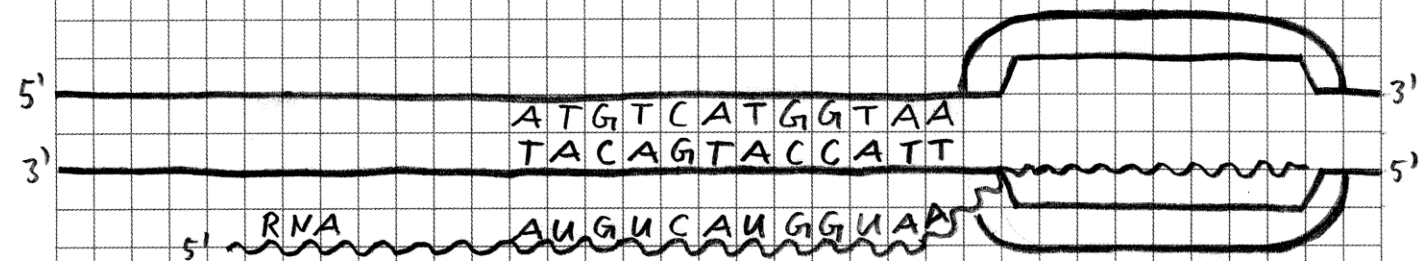
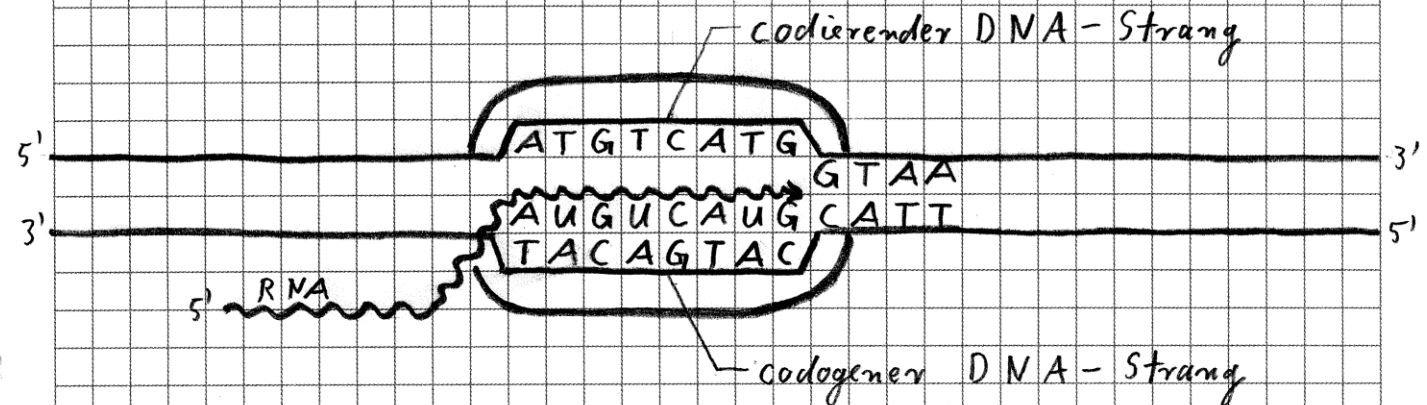
TRANSKRIPTION



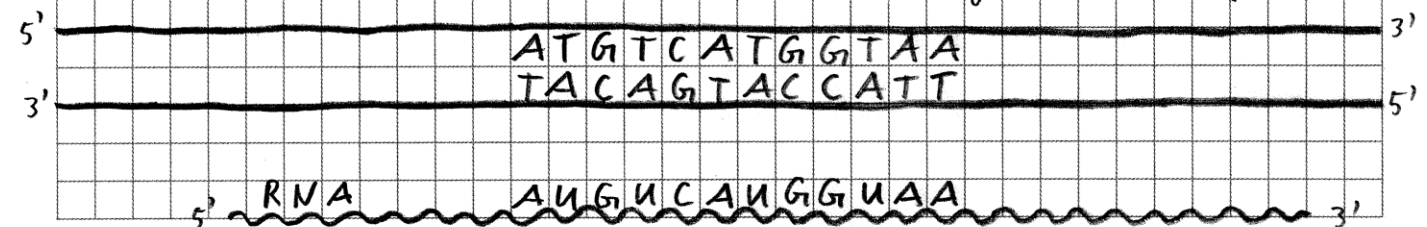
INITIATION der Transkription



ELONGATION der Transkription



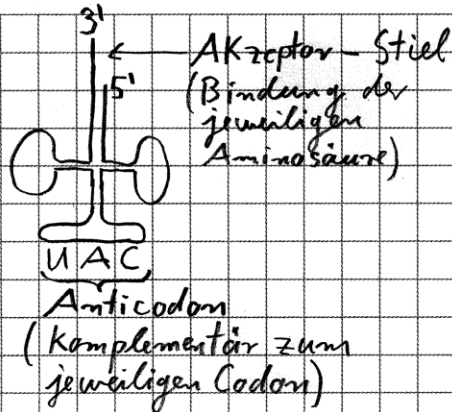
TERMINATION der Transkription (Mechanismus bei Eukaryoten nicht genau bekannt)



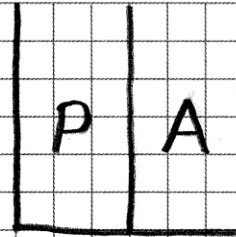
TRANSLATION

Translation ①

tRNA



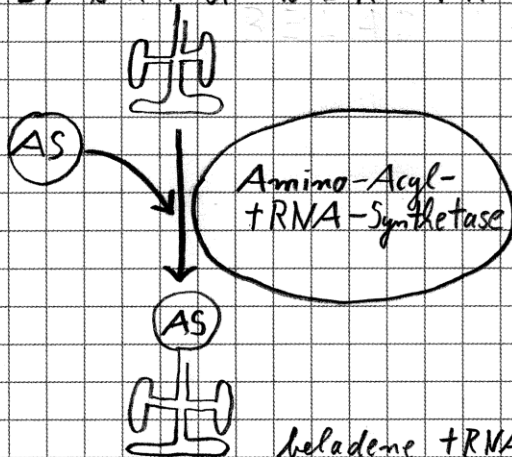
RIBOSOM



P = Peptidyl-Stelle

A = Amino-Acyl-Stelle

BELADUNG DER tRNAs MIT AMINOSÄUREN

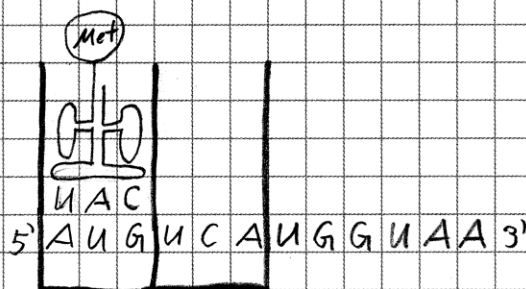


Es existiert mindestens eine tRNA pro Aminosäure (also > 20)

Es existiert eine Amino-Acyl-tRNA-Synthetase pro Aminosäure (also 20)

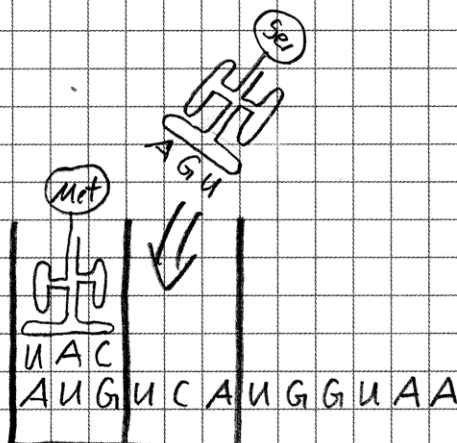
INITIATION der Translation

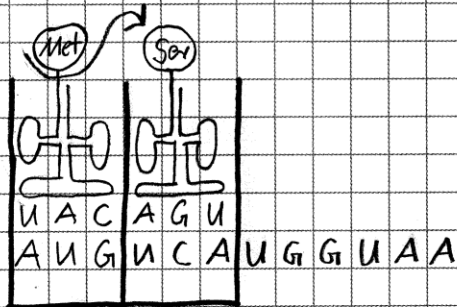
Mit Methionin beladene tRNA und Ribosom binden an Start-Codon der mRNA.



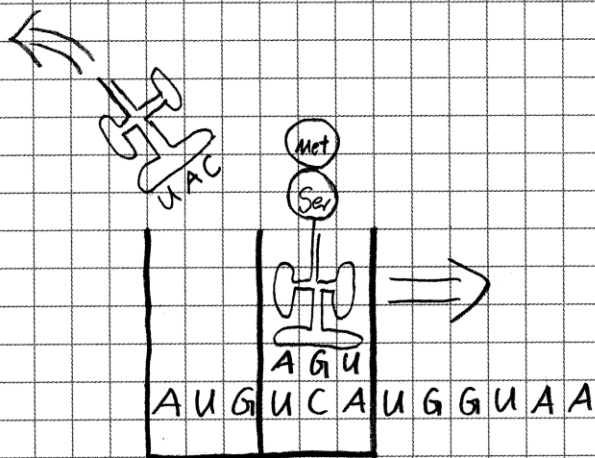
ELONGATION der Translation

Mit Serin beladene tRNA bindet an A-Stelle.

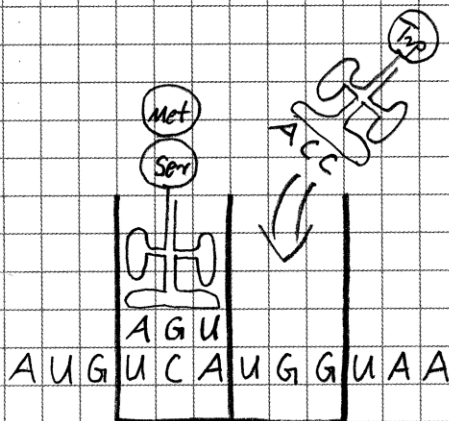




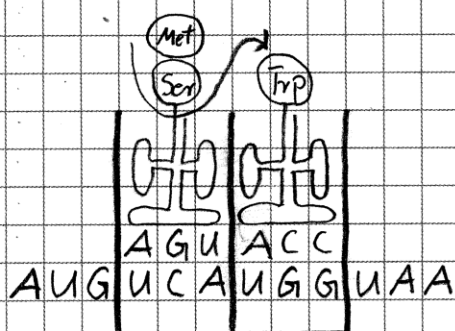
Methionin wird auf Serin übertragen.
(ribosomale Peptidyltransferase-Aktivität)



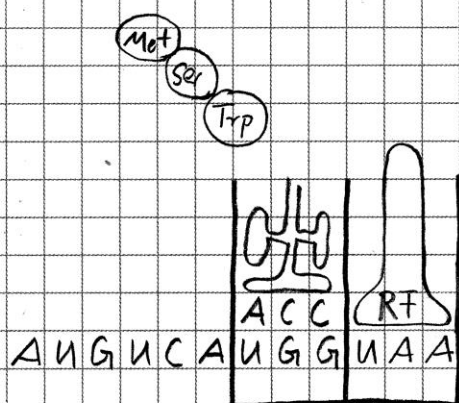
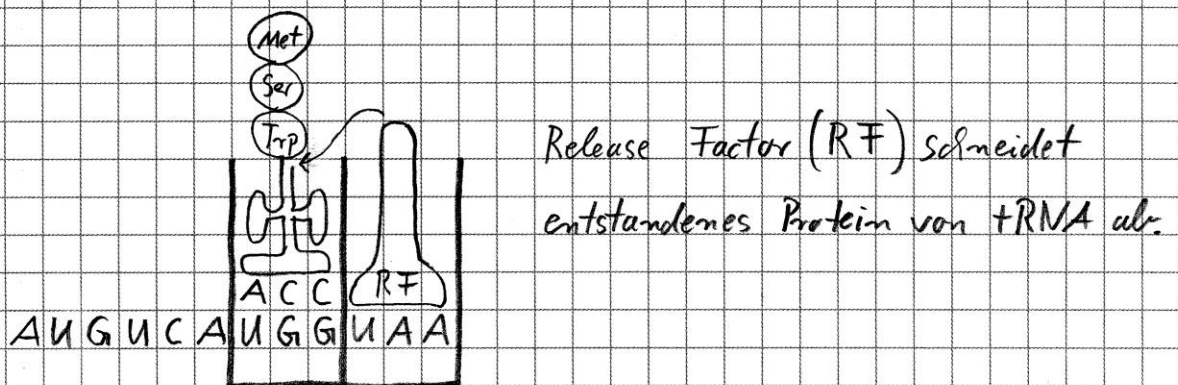
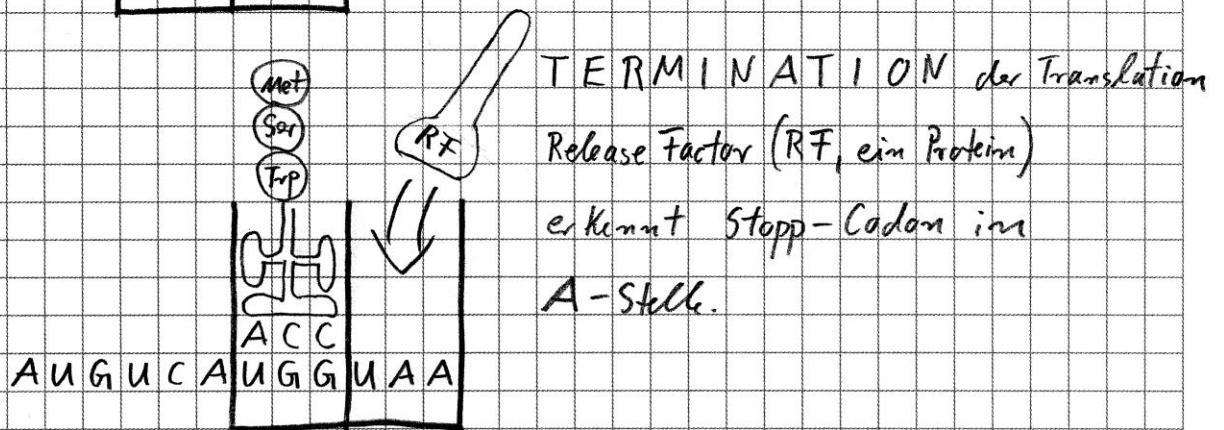
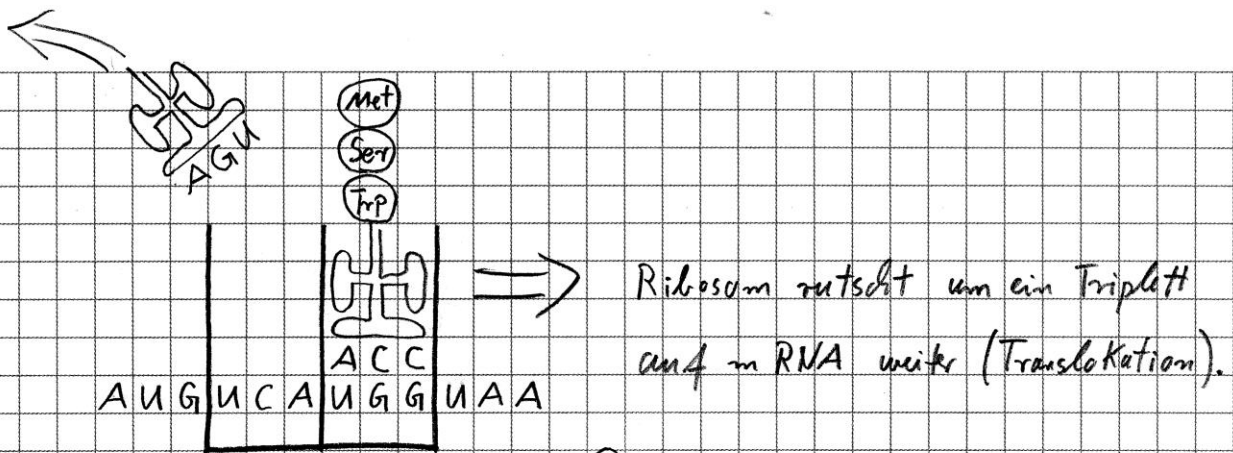
Ribosom rutscht um ein Triplet
auf mRNA weiter (Translokation).



Mit Tryptophan beladene tRNA
bindet an A-Stelle.

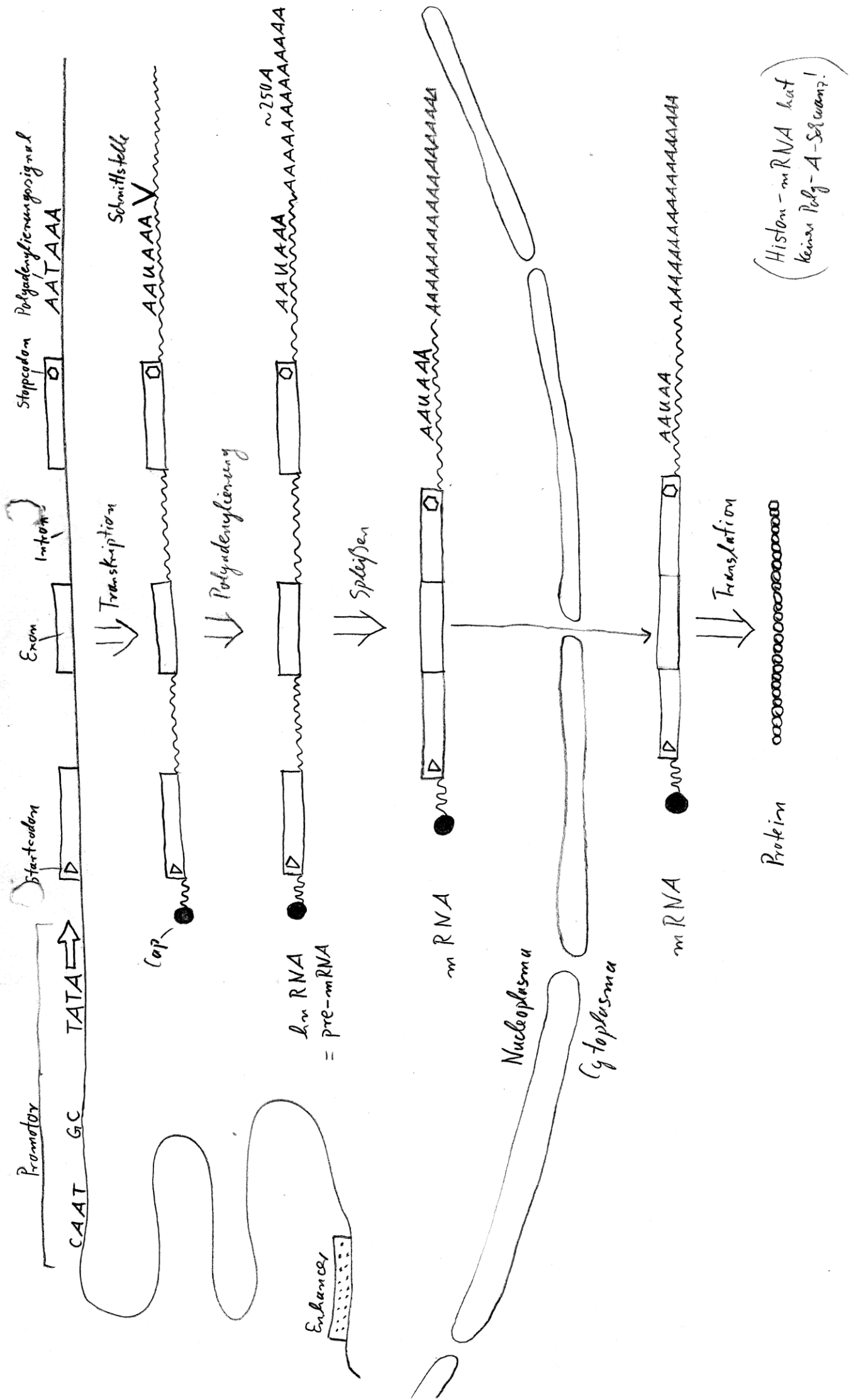


Das entstandene Dipeptid (Met-Ser)
wird auf Trp übertragen.
(ribosomale Peptidyltransferase-Aktivität)

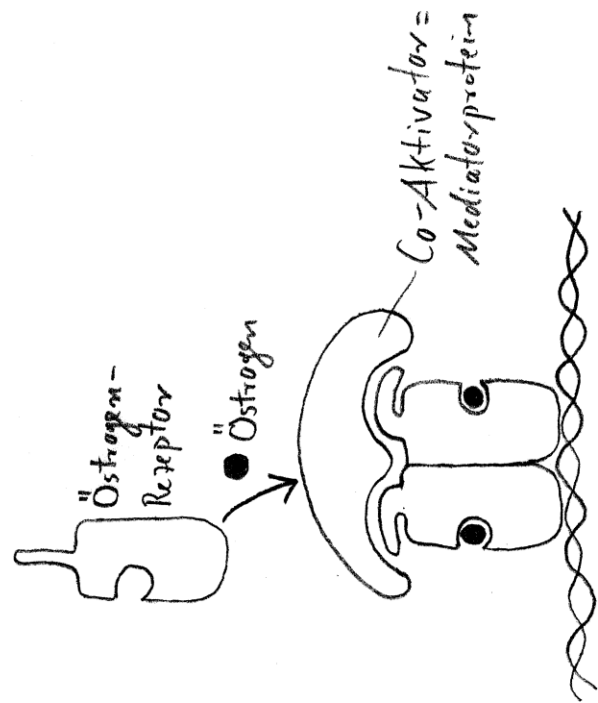
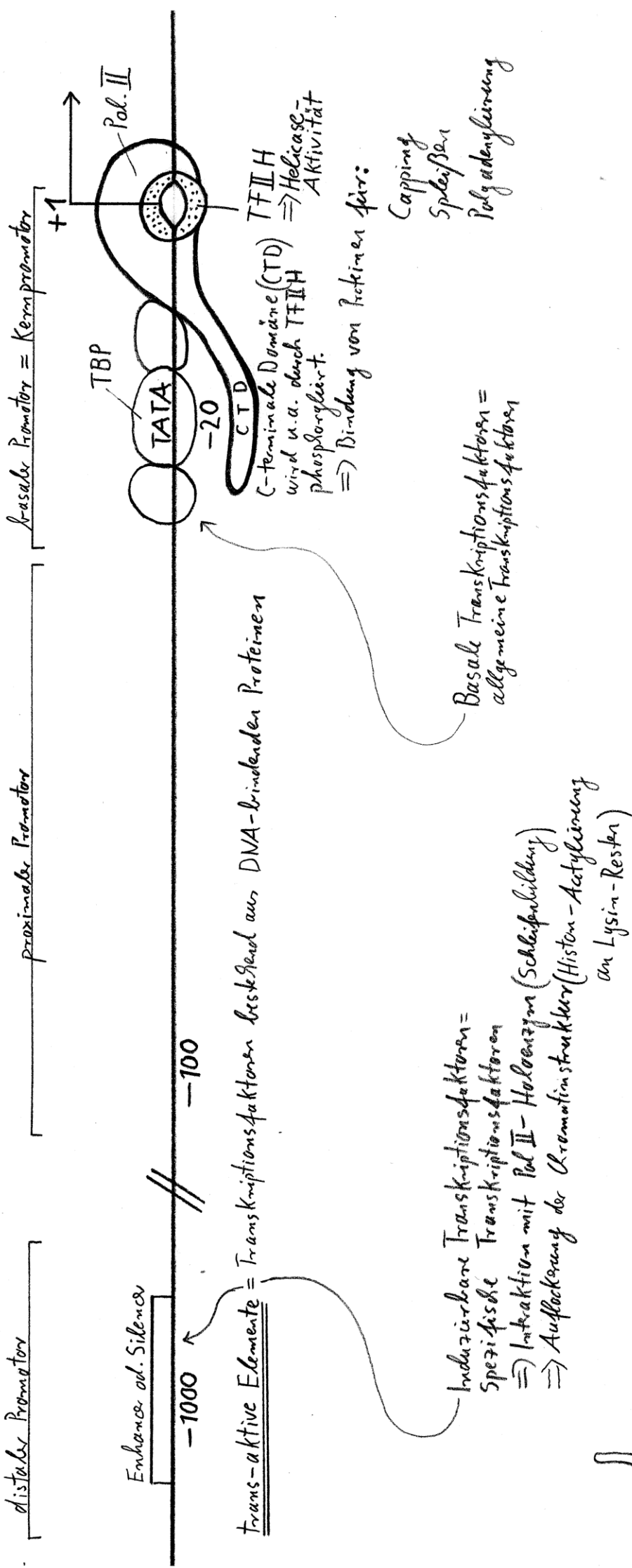


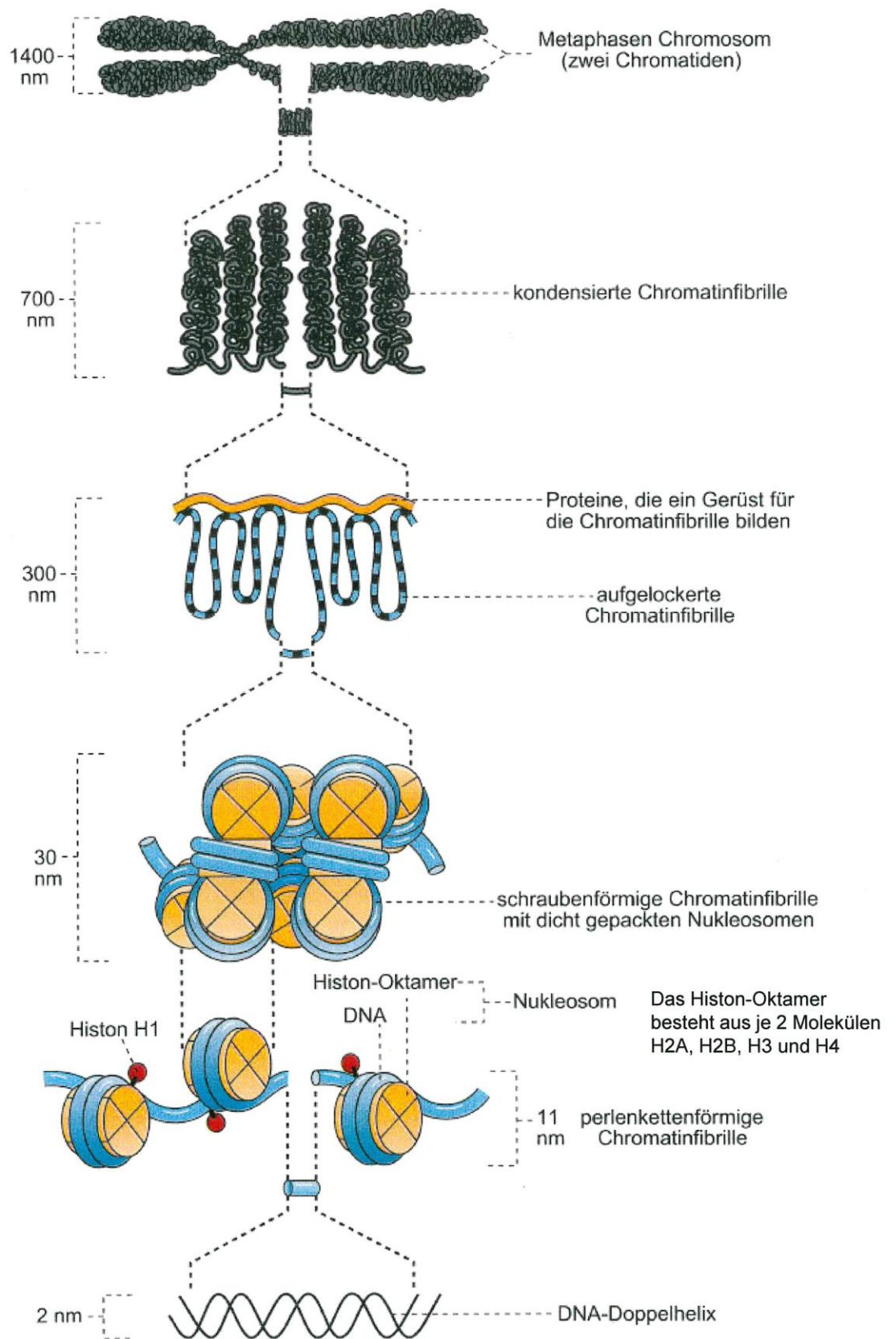
Anmerkung:

Typische Proteine bestehen nicht aus nur 3, sondern 100-1000 Aminosäuren.



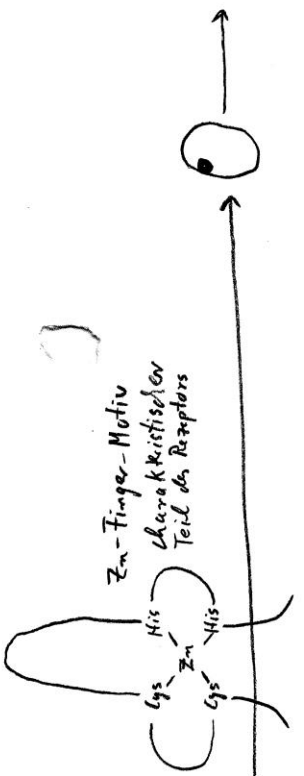
cis-aktive Elemente = Sequenzmotive auf der DNA





"intrazellulärer Rezeptor" =
 "nukleärer Rezeptor" =
 "ligandenabhängiger Transkriptionsfaktor"

Steroid-Hormone
 Retinsäure
 Vit. D
 T₃



Homodimere: Steroid-Hormone

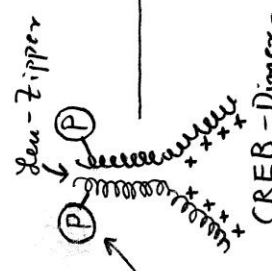
Heterodimere: Retinsäure
 Vit. D, T₃

Adrenalin
 Glucagon
 G-Protein-gekoppelter Rezeptor

cAMP
 Phosphodiesterase
 AMP

Protein Kinase A

Inaktivierung
 von Enzymen



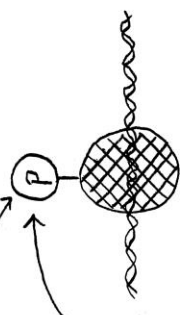
CRE =
 cAMP-responsives Element
 (Sequenzmotiv auf DNA)

Insulin
 Tyr-Kinase-Rezeptor

Protein Kinase B
 Translokation von GLUT-4

RAS
 (kleines G-Protein)

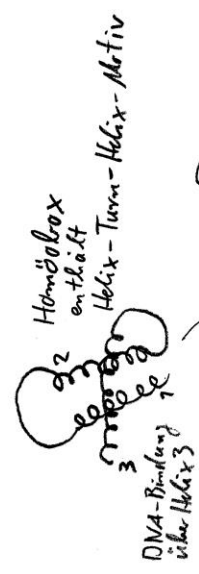
MAP-Kinasen



Hox-Gen =
 Homöogen

Expression von
 Hox-Genom

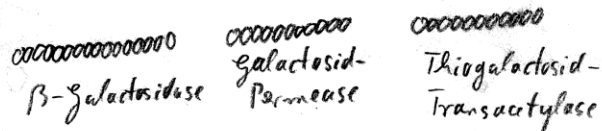
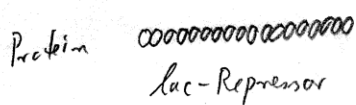
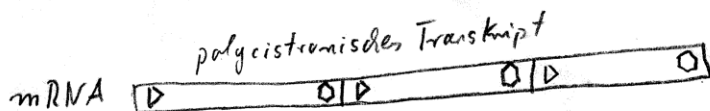
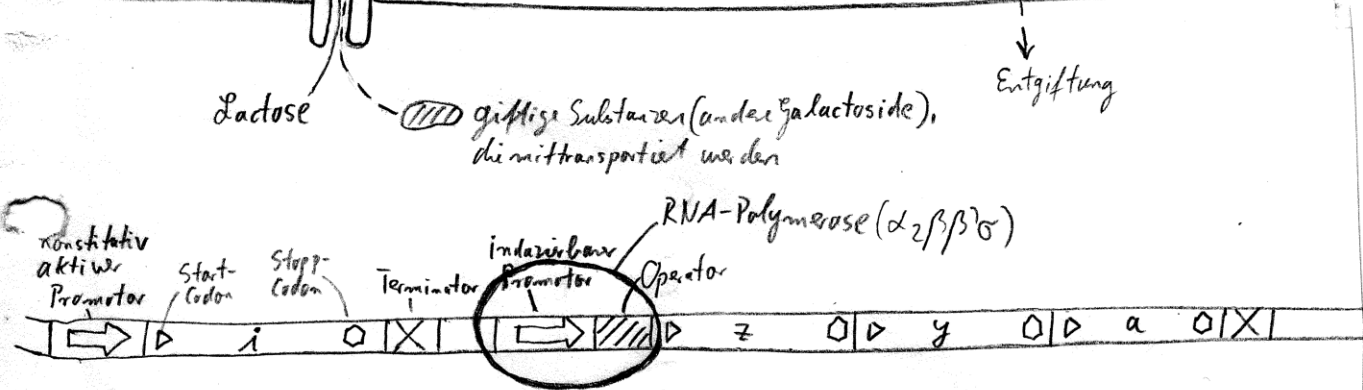
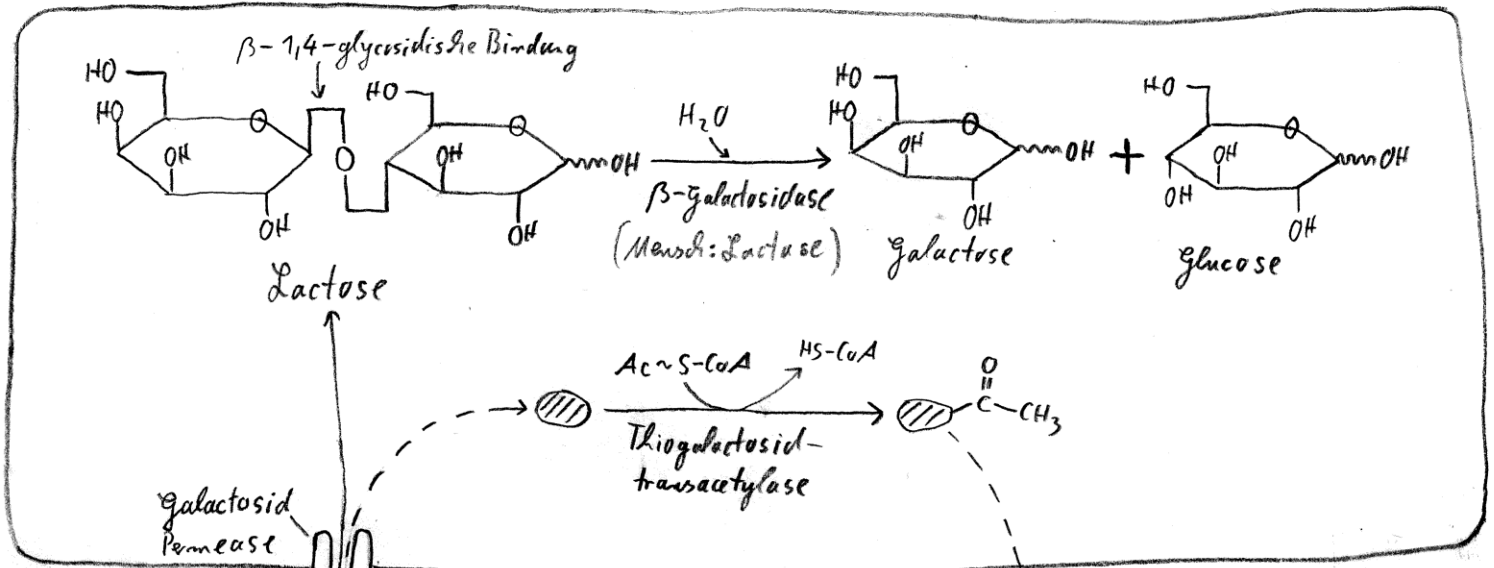
Embryonal-
 entwicklung
 (Differenzierung der
 Körpersegmente etc.)



Expression nachgeordneter Gene
 der Embryonalentwicklung
 z.B. Signaltransduktionsproteine für
 extrazelluläre Differenzierungssignale

oder andere Homöoproteine

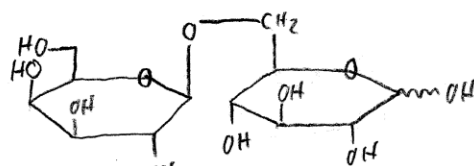
Homöo-Protein



Komplex aus CAP und cAMP bindet am Promotor und aktiviert RNA-Polymerase

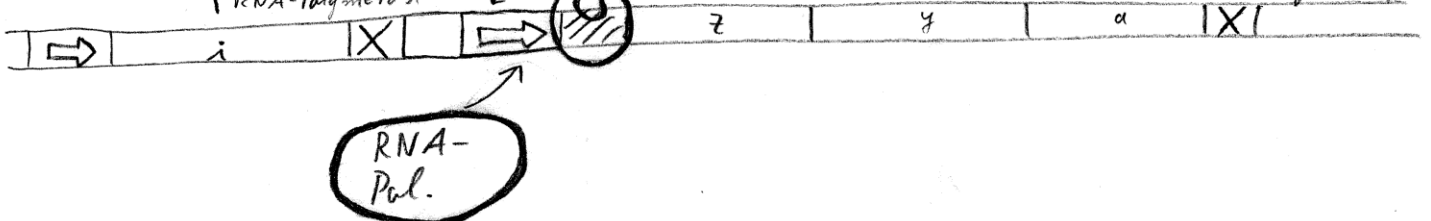
lac-Repressor

Im Abwesenheit von 1,6-Allolactose bindet lac-Repressor an Operator und verhindert Bindung der RNA-Polymerase



1,6-Allolactose $\leftarrow$ Lactose

Komplex aus lac-Repressor und 1,6-Allolactose verliert seine Affinität für den Operator und gibt Bindestelle für RNA-Polymerase frei



Lac-Operon: nur bei Bakterien