# Sequence Analysis SS 2015

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### 12. Exercise sheet, July 3rd, 2015
### Discussion: July 9th, 2015

*Exercise 1.*

*CNF*

Convert the production rule $W \rightarrow aWbWWc$ ($a, b, c$ terminal symbols) into Chomsky normal form. If the probability of of the original production is p, show the probabilities for the productions in normal form.

*Exercise 2.*

*Covariance models*

```
Ara.ven.  GGUCGC..GUCAACAGUGUUUGAU.CGAAC
Onc.ner.  UUACCUGCUUCAACAGUGCUUGAACGGCAA
Gal.gal.  UUUAUC..AGUGACAGCGUUCACU.AUAAA
Del.leu.  UCGUUC..GUCCUCAGUGCAGGGC.AACAG
SS_cons   <<<<<...<<<<<......>>>>>.>>>>>
```

Build a covariance model for the alignment of RNAs. Visualize it as a tree, like presented in the lecture.