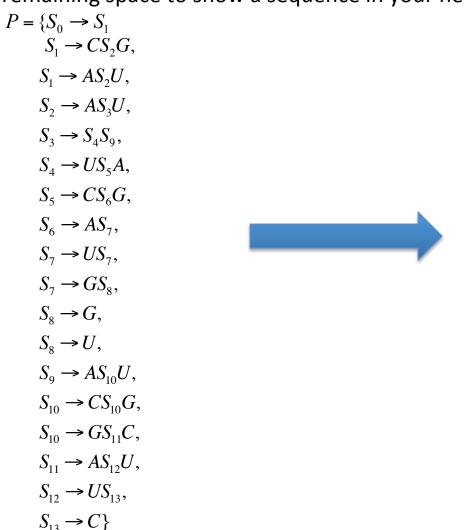
## **Context-Free Grammar**

**Task:** The grammar from the lecture is shown on the left. Modify the grammar so that it can represent a secondary structure where both loops can have a length of up to 4 bases. Use the remaining space to show a sequence in your new grammar.

$$P = \{S_0 \rightarrow S_1 \\ S_1 \rightarrow CS_2G, \\ S_1 \rightarrow AS_2U, \\ S_2 \rightarrow AS_3U, \\ S_3 \rightarrow S_4S_9, \\ S_4 \rightarrow US_5A, \\ S_5 \rightarrow CS_6G, \\ S_6 \rightarrow AS_7, \\ S_7 \rightarrow US_7, \\ S_7 \rightarrow GS_8, \\ S_8 \rightarrow G, \\ S_8 \rightarrow U, \\ S_9 \rightarrow AS_{10}U, \\ S_{10} \rightarrow CS_{10}G, \\ S_{10} \rightarrow GS_{11}C, \\ S_{11} \rightarrow AS_{12}U, \\ S_{12} \rightarrow US_{13}, \\ S_{13} \rightarrow C\}$$

## **Context-Free Grammar**

**Task:** The grammar from the lecture is shown on the left. Modify the grammar so that it can represent a secondary structure where both loops can have a length of up to 4 bases. Use the remaining space to show a sequence in your new grammar.



$$P = \{S_0 \rightarrow S_1, S_1 \rightarrow CS_2G, S_1 \rightarrow AS_2U, S_2 \rightarrow AS_3U, S_3 \rightarrow S_4S_9, S_4 \rightarrow US_5A, S_5 \rightarrow CL_1G, S_9 \rightarrow AS_{10}U, S_{10} \rightarrow CS_{10}G, S_{11} \rightarrow AL_1U, S_{11} \rightarrow B \mid BL_2, S_1 \rightarrow B \mid BL_3, S_2 \rightarrow B \mid BB, S_1 \rightarrow A \mid C \mid G \mid U\}$$

A generic solution for loops with any base composition