WELLCOME TRUST CENTRE FOR HUMAN GENETICS
UNIVERSITY OF OXFORD

DNA BASE MODELLING (5 min prep, 5 min build)

Please read this protocol fully and take note of the precautions on the back before beginning.

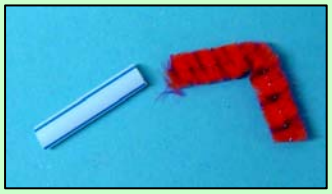
APPARATUS

3 x non-bendy straws
3 x artists pipecleaners
Scissors

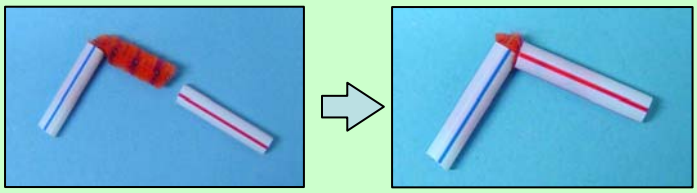
K'Nex:
8 x blue connectors
9 x white connectors
2 x yellow connectors
3 x orange connectors
3 x white rods (1 5/16")
25 x green rods (3/4")

Preparing the pieces
- Cut three straws into 3 cm pieces.
- Cut three pipecleaners into 2 cm pieces.

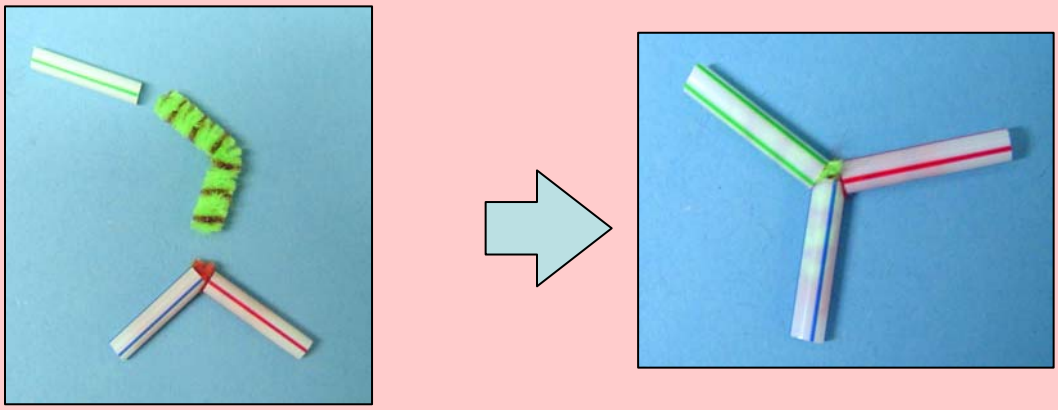
Joining the pieces
- Take a piece of pipecleaner and bend it.



- Push each end into a piece of straw.



Joining more pieces
- To connect three pieces of straw, push a second pipecleaner into one of the pieces of straw.



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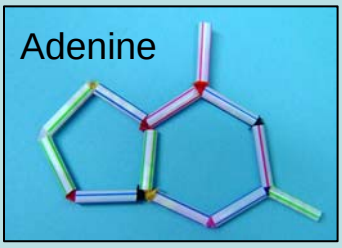
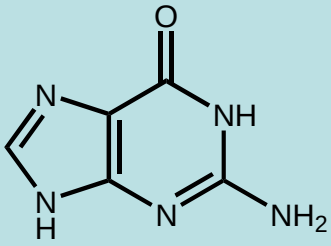
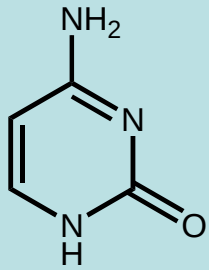
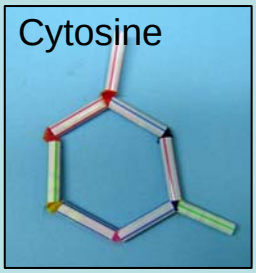
Templates for the models

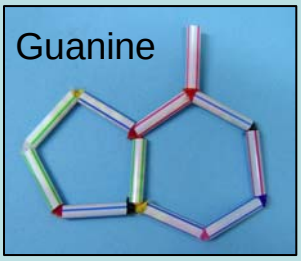
- Fit together your pieces of pipecleaners and straws to make the models below.

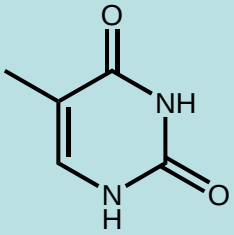


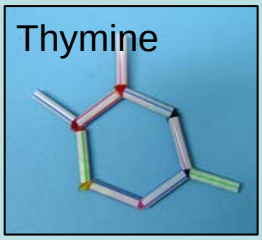






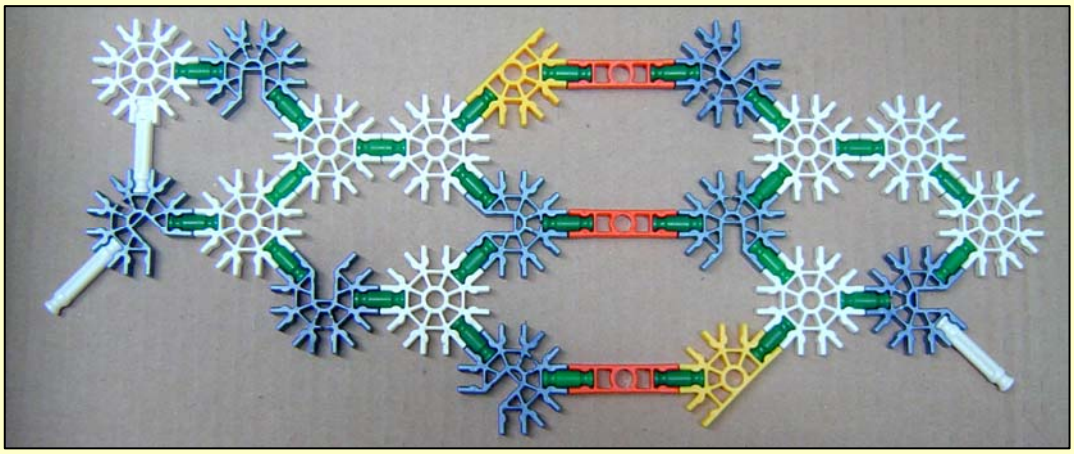






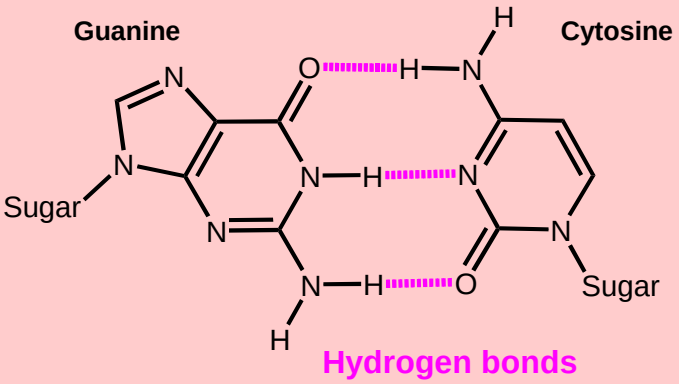
K'Nex models

- You can also use K'Nex to make a model of a Guanine and Cytosine pair.
- Fit your pieces together using the photograph below as a guide.



WHAT IS HAPPENING?

In the model, connectors represent different atoms. White – *carbon*, blue – *nitrogen*, yellow – *oxygen*. The rods represent the covalent bonds between the atoms in the bases and the orange connectors represent the hydrogen bonds between the bases. It may help you to compare the model to the chemical structure on the right.



PRECAUTIONS

TAKE CARE WHEN HANDLING SCISSORS, AS THEY MAY BE SHARP.
THESE STEPS MAY REQUIRE THE HELP OF AN ADULT.