How do we study genetic diversity?

- We look at the sequence of different kinds of genes in the different trees and compare them:
- - CAD4: it's responsible for the lignin synthesis in the wood.

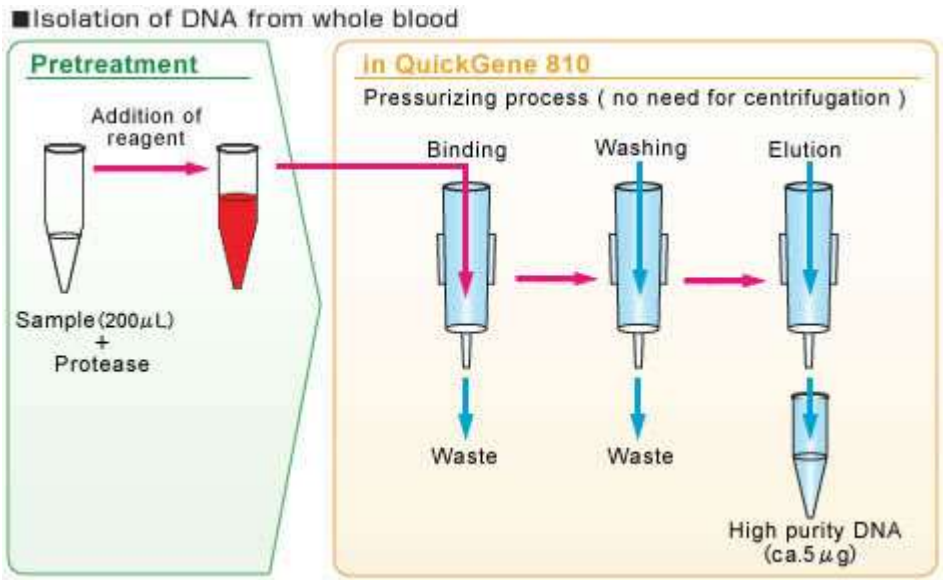
- - PHYA, PHYB….that are responsible for photoperiodism, especially genes that control blooming…We can study if there's a geographic difference for this gene and this strait.

Male flowers

Female flowers

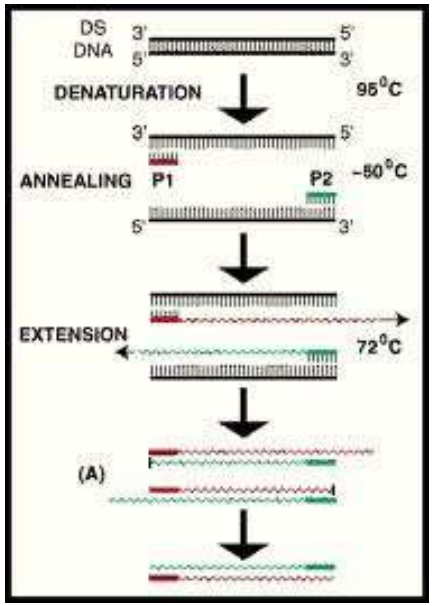
Step 1: extraction

• It's a long process to extract and purify DNA…We need to cut the leaves and to mix them with different kinds of buffers and centrifuge all to get it pure.



Step 2: amplification

- We don't have enough DNA to analyze it…We must amplify it!
- We use a PCR:
- http://www.youtube.com/watch?v=HMC7c2T8fVk&feature=fvwrel

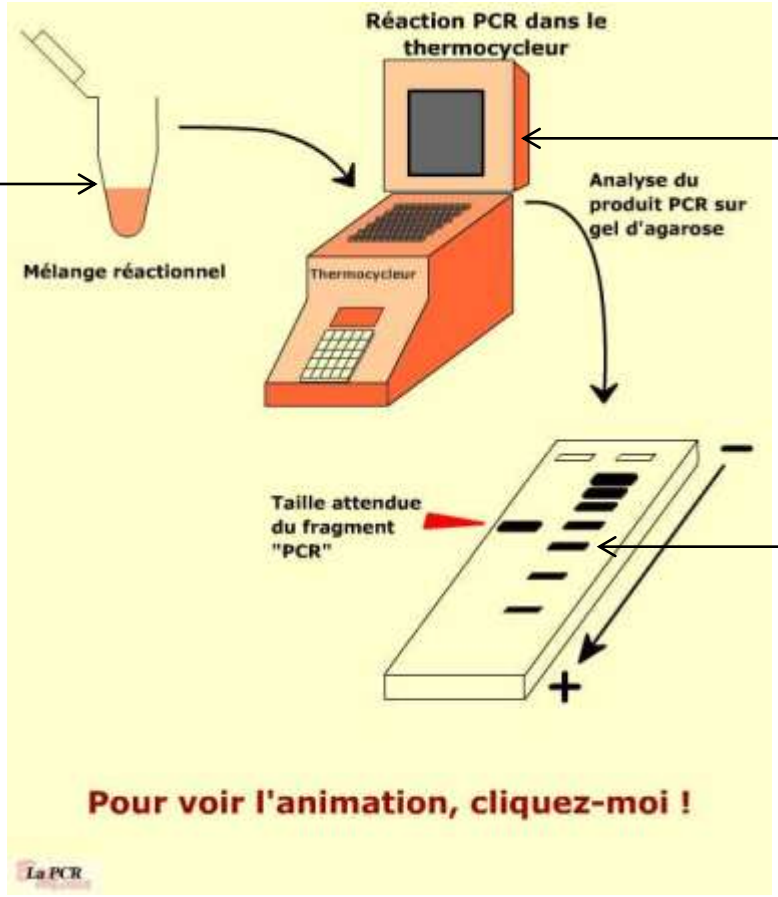


The temperature varies: when it decreases, DNA strand binds when it increases, they seperate. Primers bind to DNA and DNA polymerase copies the strands.

This enzyme is special because it can work when the temperature is high: it's Taq polymerase

Our work for PCR…

1/Mix:
nucleotides, Taq polymerase, primers, buffer, our DNA sample



2/ Putting the mix in a machine that makes vary the temperature cycle.

3/ Testing the amplification using an electrophoresis

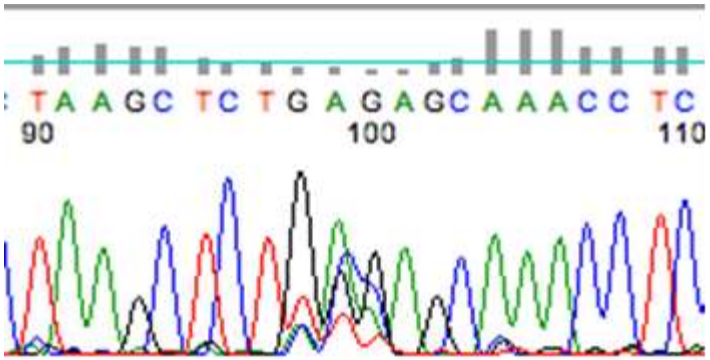
Step 3: sequencing

• We send our amplified samples to a French Lab, in Evry, the Genoscope:

•The scientists sequence them using Sanger method

Step 4: analyzing data

- The genoscope will send us the results.
- We could see different spikes that correspond to the different nucleotids and read the sequence



Thanks to a software, Génalys, we could compare them and discuss our hypothesis!

How about you?

- Finding some Kent samples and work with us on their genetic diversity.
- Building projects about biology and sharing informations thanks to our website:
- Visiting us in France?

The Sanger Method