



One billionth of a meter





It was my first time there. Nothing changing color or exploding,  
just a container full of rusty wire and clips with a clear gel.



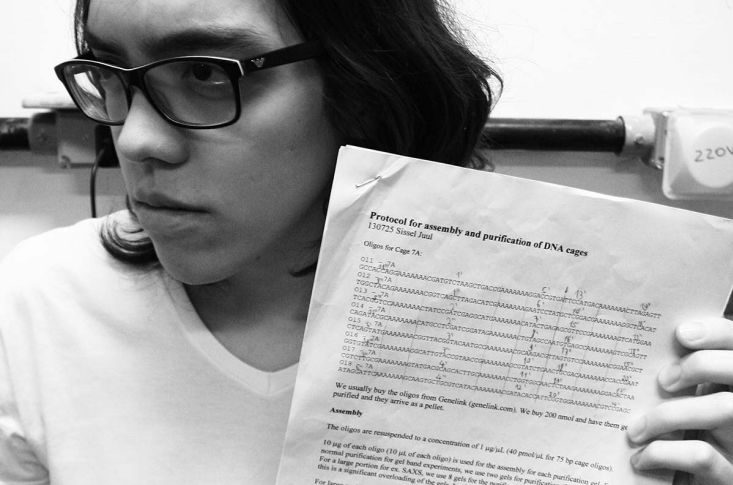
And a vertical line, more chubby in some spots,  
of an almost transparent pink.



Nicolli explained: this was the electrophoresis and the pink line was our DNA sample, "running" on the gel from the top down.

The lighter samples go faster to the base, while the heavier ones park in the middle of the road.





# Protocol for assembly and purification of DNA cages 130725 Sissel Juul

Oligos for Cage 7A:

O11 -7A  
GCCAAGGAAAAACGATGCTAAAGCTGACGAAAAAGGACCTGATTCATGACGAAAAACTTAGAGTT  
O12 -7A  
TGGCTACAGAAAAAACGGTCACTTAGACATCGGAAAAAGAGTCTATGCTCGAGAAAAAGGCTGACAT  
O13 -7A  
TCACCTTCGAAAAAACTATCCGATCGAGGACATGAAAAACATACTAGAGCGCTTCGAAAAAACTCATGAA  
O14 -7A  
CAGATACGCAAAAAACATGCGCTGATCGGATAGAAAACTGTAGGCAATGTGAGCGAAAAAACTCGGTT  
O15 -7A  
CTGATATGAAAAACGGTTACGATACATGCGAAAAAGCGAGAGCTTATGTCGAAAAAACTCGGTT  
O16 -7A  
GGTGTATCGAAAAAGGCAATGTACCGTAACGAAAAAGCGTATGTCGAAAAAACTCGGTT  
O17 -7A  
CGCTTCGAAAAAACTATGACGCACTTCGAAAAAACTGCTGCGAAAAAACTCGGTT  
O18 -7A  
ATAGATTGAAAAAGCACTGCTGATACAAAAAGTACACGCTTCTGCGAAAAAACTCGGTT

We usually buy the oligos from Genelink ([genelink.com](http://genelink.com)). We buy 200 nmol and have them gel purified and they arrive as a pellet.

## Assembly

The oligos are resuspended to a concentration of 1  $\mu\text{g}/\mu\text{L}$  (40 pmol/ $\mu\text{L}$  for 75 bp cage oligos). 10  $\mu\text{g}$  of each oligo (10  $\mu\text{L}$  of each oligo) is used for the assembly for each purification gel. For a large portion for ex. SAXS, we use 8 gels for the purification. This is a significant overloading of the gels.

So we could see if we had managed to build our DNA nanocage, or rather see if a spot appeared on a specific point of the gel that indicated that yes, in that sample there was something with a molecular weight close to what the nanocage would have.



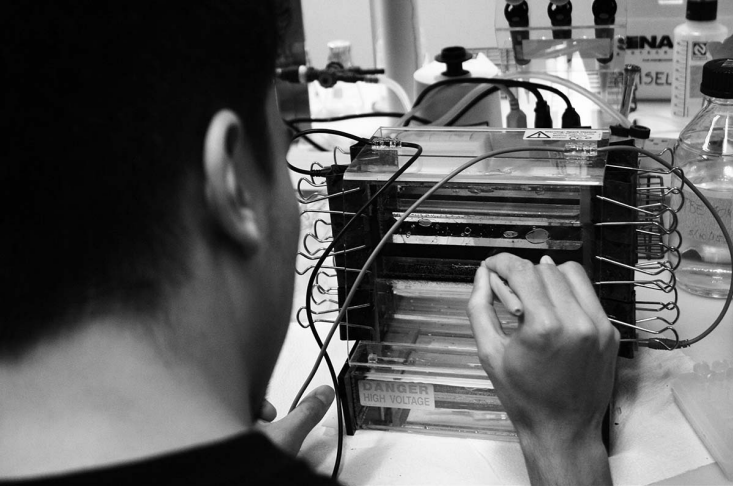
We should just wait.



An hour and a half, waiting.



That day it went wrong, apparently the sample did not even enter the gel.  
We performed this same procedure 7 more times until we got a good result.



How to see the invisible? In Molecular Biology,  
it is through the marks that the experience leaves.  
That sounded familiar to me, an anthropologist.



Essay done in October 2015 together with some of the 10 undergraduate students from USP who participated in the BIOMOD international biomolecular design competition. The group was the first South American to participate and had students from chemistry, physics, bimoedial sciences, design, social sciences and mathematics.

