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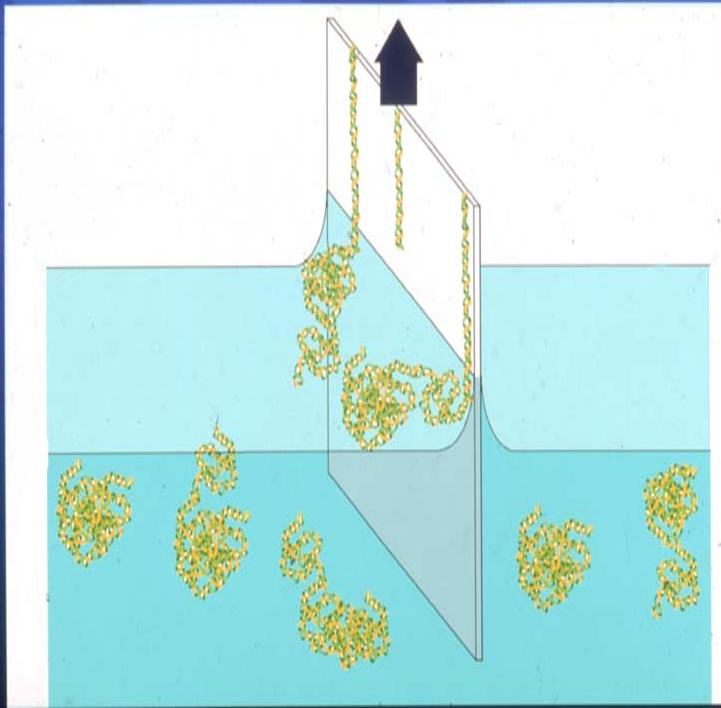
DNA Instability and DNA Replication: A DNA Single Molecules Approach

- The goal of this project is to elaborate an approach at the genome scale, based on the analysis of individual DNA molecules to define:
 - The spatial pattern of an over-represented/rearranged region in the genome and to follow its changes during tumour progression.
 - How the replication pattern and the kinetics of replication differ from one tumor type to another (relative to the respective transcription profile).

DNA Instability and DNA Replication: A DNA Single Molecules Approach

- The technology: stretching single DNA molecules by the action of a receding air/water interface.
- Dynamic rate of genomic changes in a tumour over time.
- The identification and mapping origins of replication on a genome wide basis.

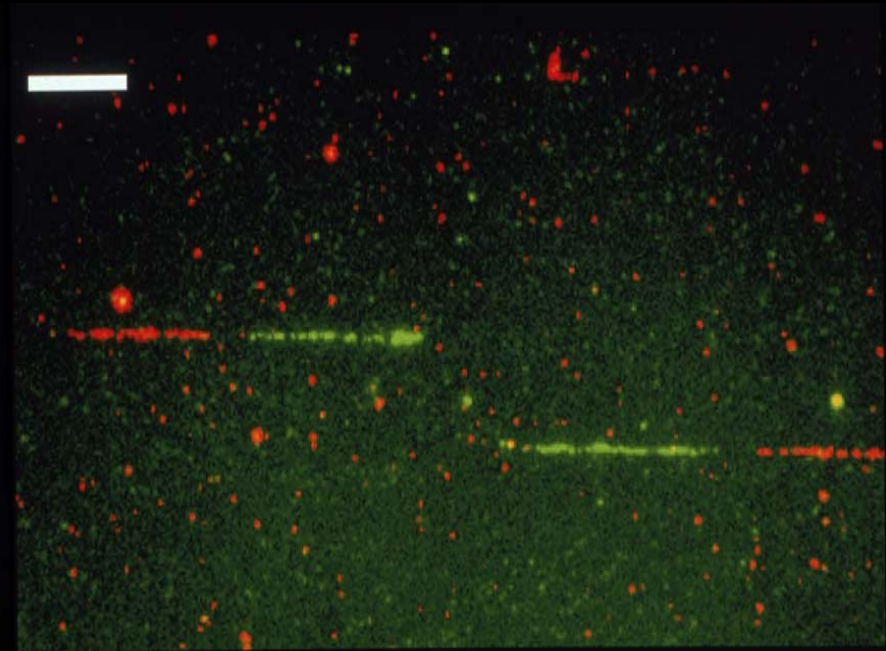
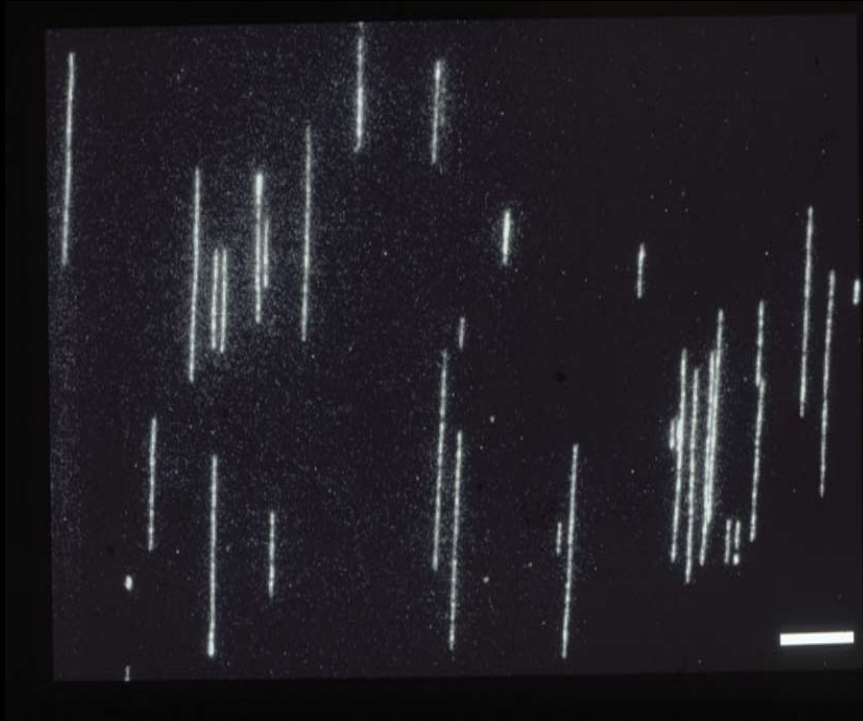
Molecular Combing of Genomic DNA



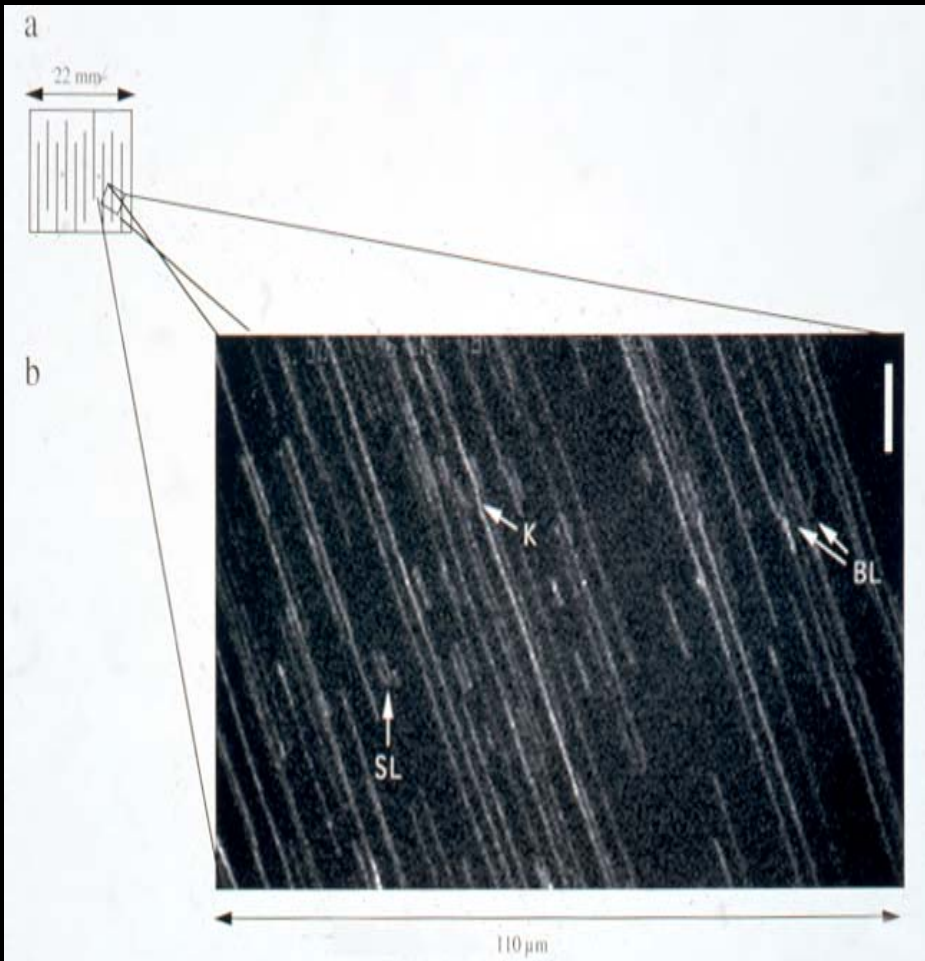
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- Preparation of a DNA solution
- Incubation of the surface in the solution
- extraction of the surface out of the solution

Combed DNA are irreversibly anchored and can be visualized by fluorescent markers



Molecular Combing allows for Whole Genome Assays at the Single DNA molecule level



- The ability to comb high concentrations of total genomic DNA (which, for human, can reach up to hundreds of genomes per cover slip)

The Goal

To develop:

- Hardware for a rapid screening of fluorescence signals on stretched DNA molecules
- Software for a rapid signal recognition of fluorescent stretched DNA molecules

The partners

- Olympus Biosystems – Germany
- LingVitae – Norway
- Logicande – France
- Pasteur Institute - France

Our cooperation request is in the field of signal recognition and high throughput screening devices.