19/11/2025

Infrastructure de Recherche “Biologie Spatiale”

Marie-Astrid Boutet & Richard Danger

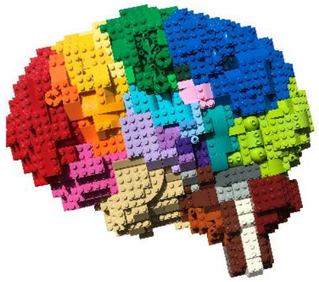
SpOT
Spatial Omics & Technologies

BioCore

RÉGION PAYS DE LA LOIRE

The rise of spatial biology

ORGAN

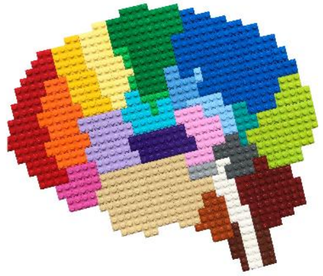




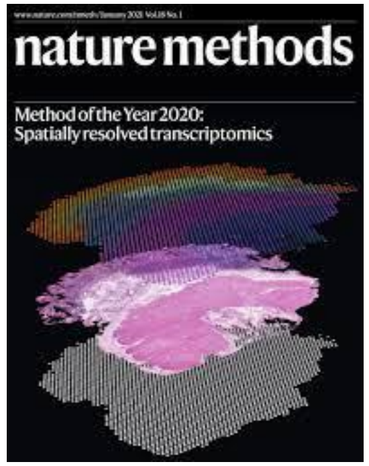
Bulk RNAseq

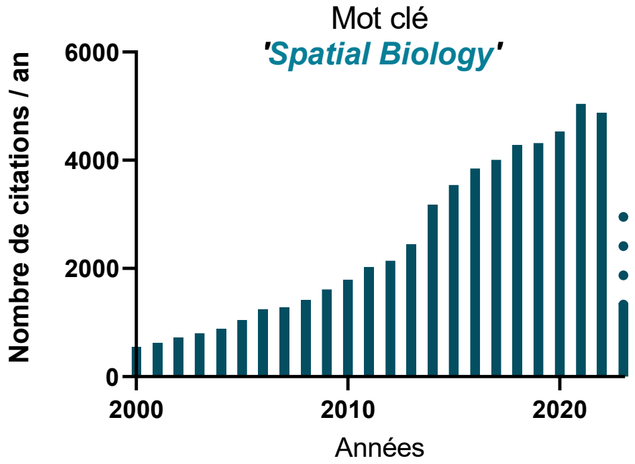


scRNAseq



Spatial transcriptomic

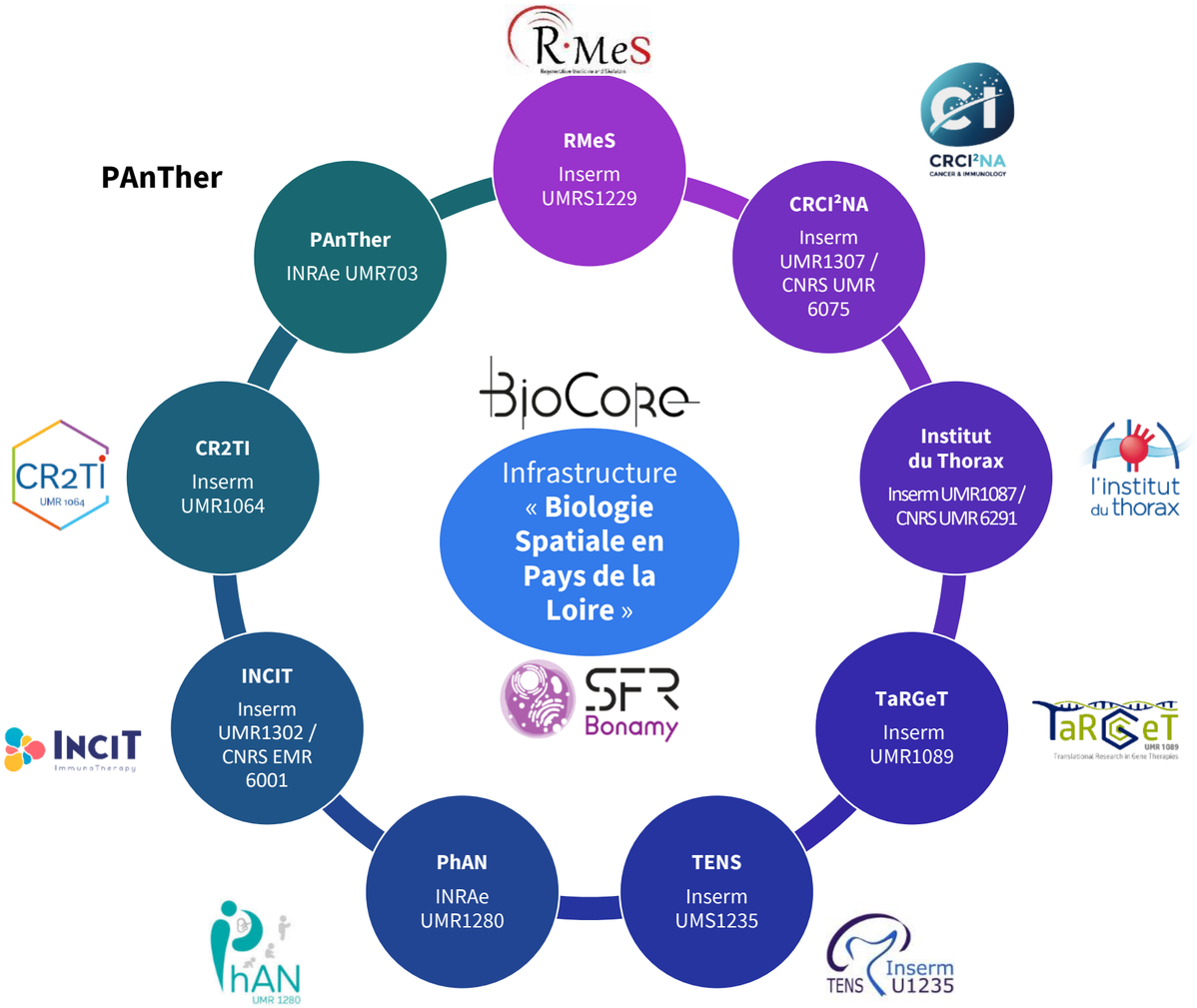




→ Spatial transcriptomics/proteomics methods enable the analysis of the cellular transcriptome or proteome while preserving their physical location and interactions within the tissue

- Cellular heterogeneity
- Proximity-dependent intercellular communication

A need for Spatial Biology in the area

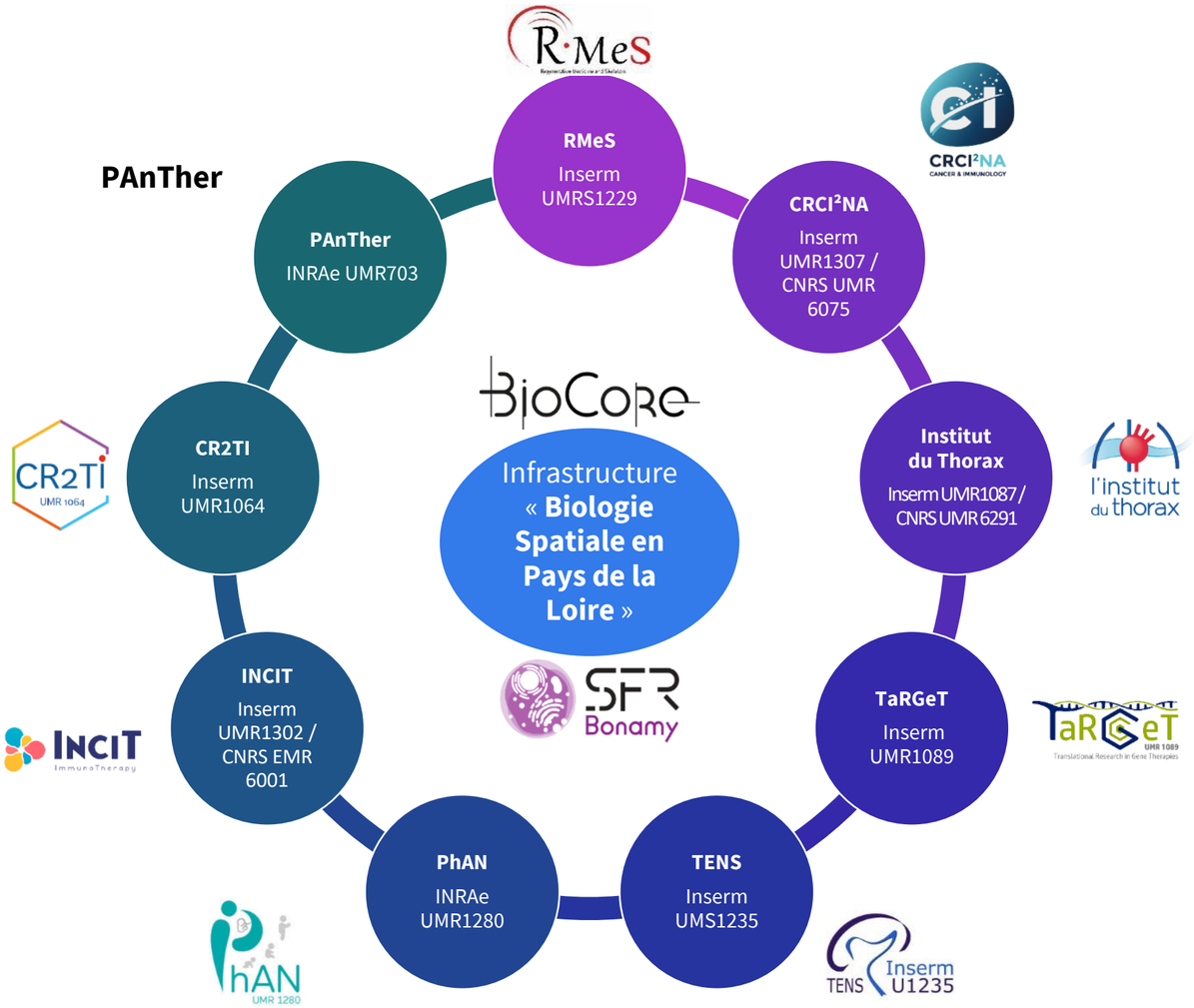


→ This represents an identified need for **numerous research teams** in the Pays de la Loire region.

→ Many projects identified, including **3 “pioneer” project** (MA. Boutet-RMeS, R. Danger-CR2TI, V. Guen-CRCI2NA)



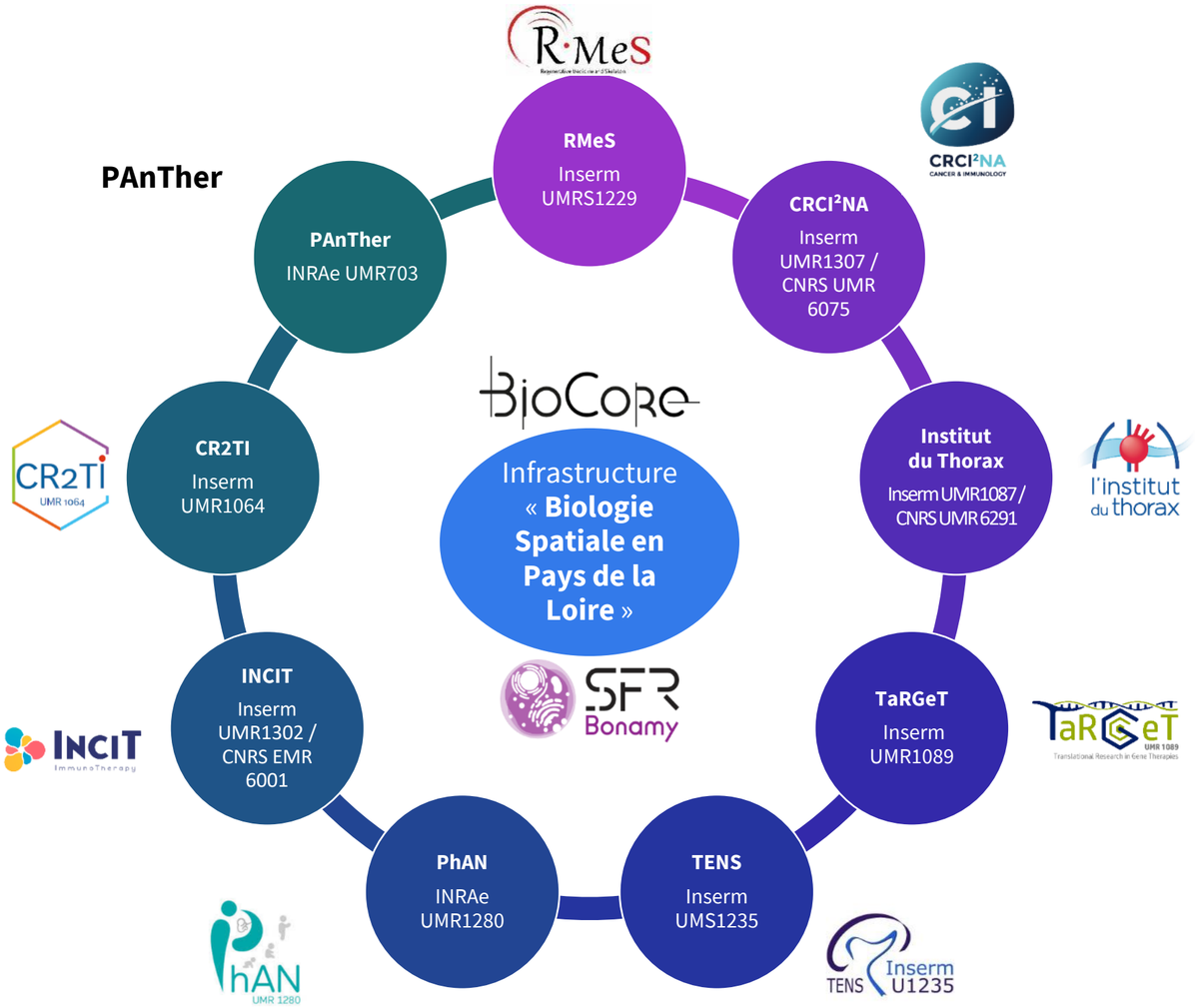
Launch of the "Spatial Biology" Infrastructure: SpOT



→ Within **UMS Biocore**

→ Funded by the **Région des Pays de la Loire** (appel à projets « Infrastructures de recherche ligériennes » de 2024)

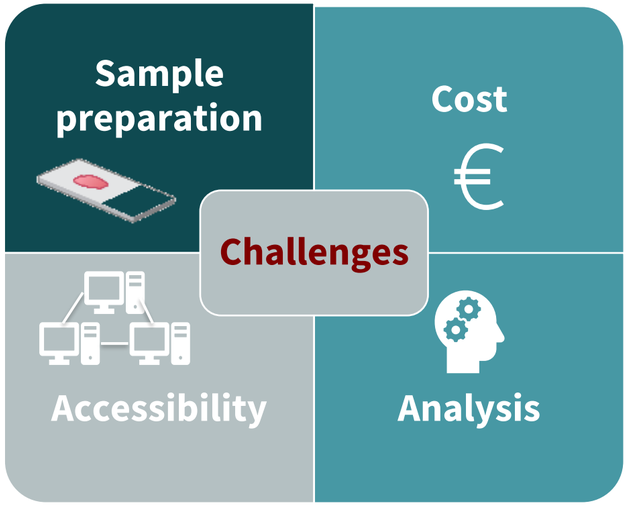
Launch of the "Spatial Biology" Infrastructure: SpOT



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→ Challenges to implement spatial biology



Infrastructure Biologie Spatiale

Transcriptomique

10X Genomics *Chromium*



Whole transcriptome analyses



Single-cell imaging transcriptomic analyses



High-plex protein analyses COMET™



Automated Tissue Arrayer

QC & Séquençage

Caliper & Bioanalyzer

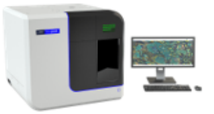
Illumina

Stockage des données

Glicid cluster

Microscopie

Marquages multiplex



AKOYA *Opal*

Protéomique

Préparation des échantillons

Decalcification
Déshydratation
Coupes
Colorations

Tri cellulaire

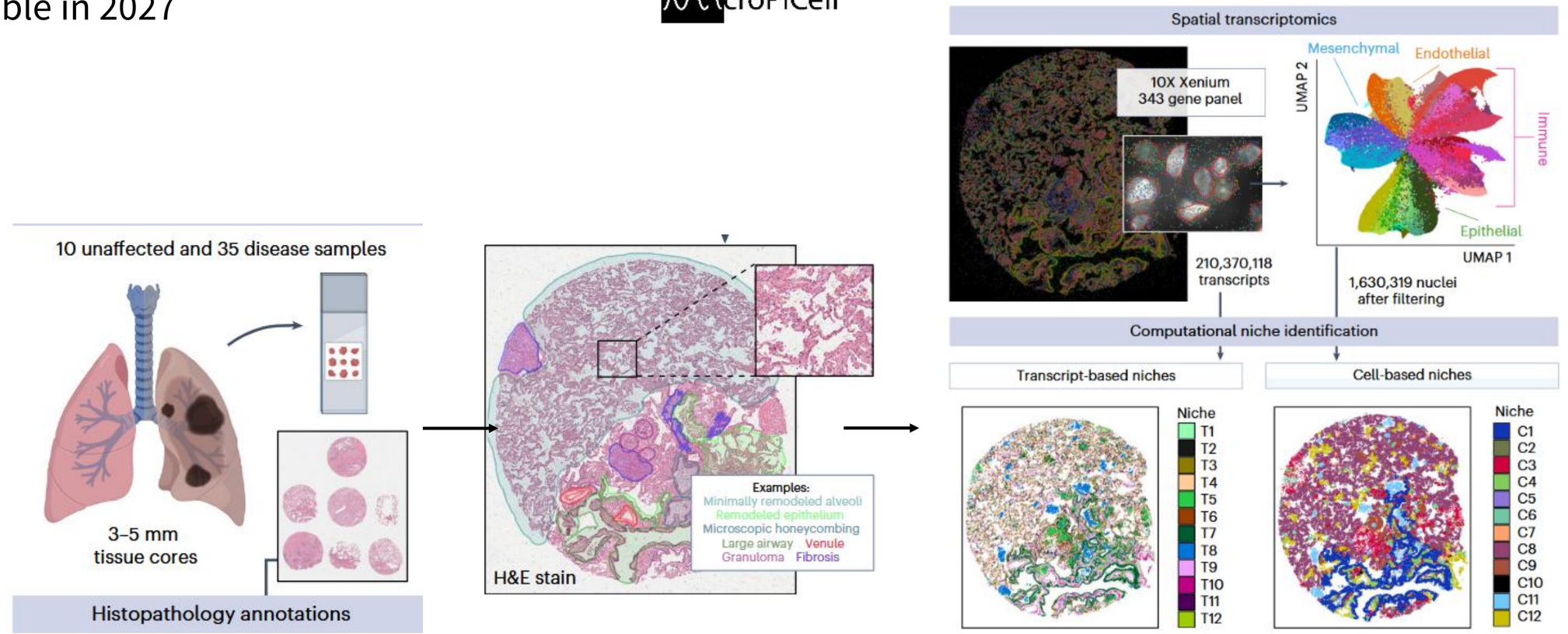


Echantillons biologiques
(blocs paraffine, tissu frais, organoïdes)

SpOT: Tissue Microarray

→ Preparation of TMA (« Tissue MicroArray »)
→ Available in 2027

MicroPICell



Vannan, A. *et al*. *Nat Genet* **57**, 647–658 (2025)

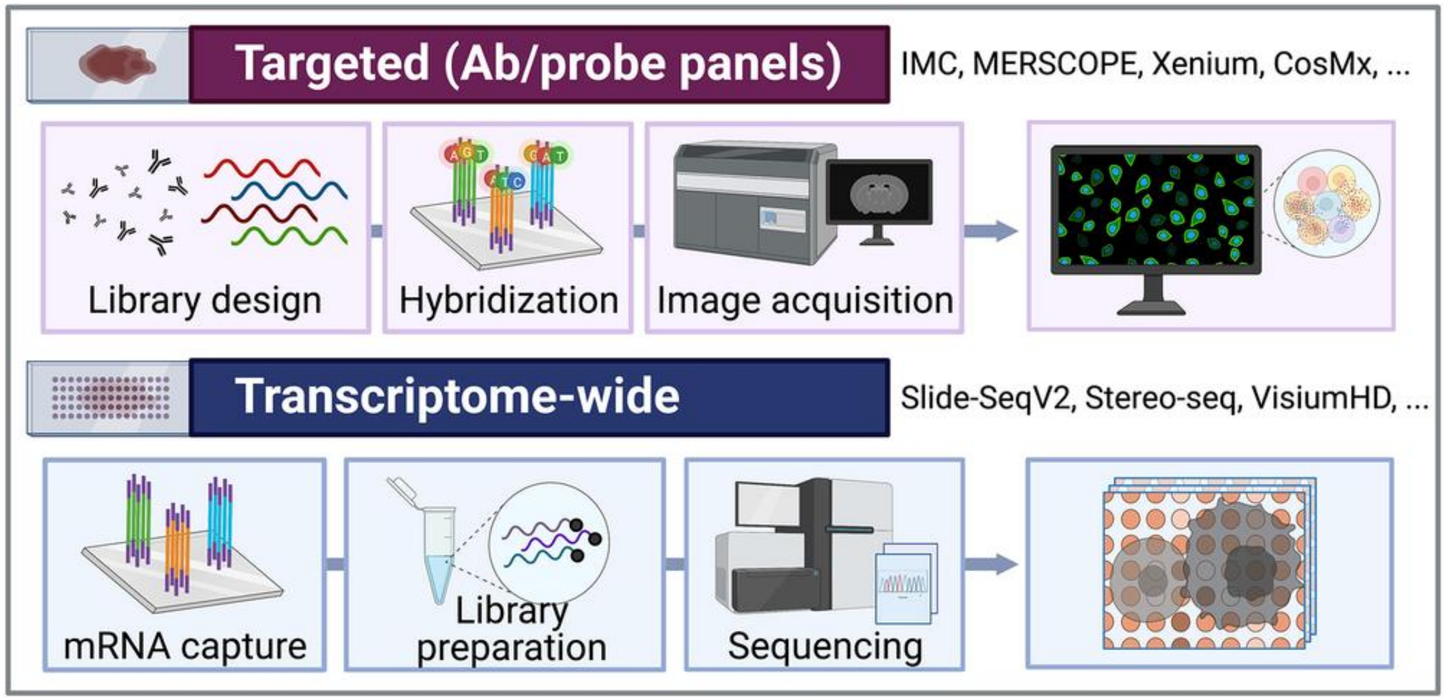
SpOT: High-plex protein analyses

→ High-plex protein analyses combined with RNA detection (up to 12 targets)
→ COMET Bio-Techne



SpOT: Spatial transcriptomic

→ Spatial transcriptomic
→ « Appel d'offre » in progress, installation of 2 instruments planned for 1st trimester 2027



SpOT: Spatial transcriptomic

SysMics NeXT

CR2TI Centre de Recherche Translationnelle en Transplantation et Immunologie UMR 1064

LABEX SysMics

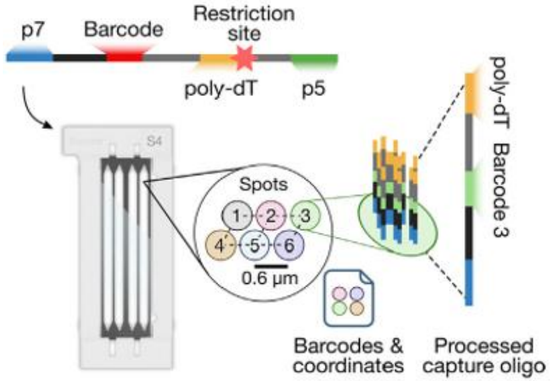
→ Jérémie Poschmann

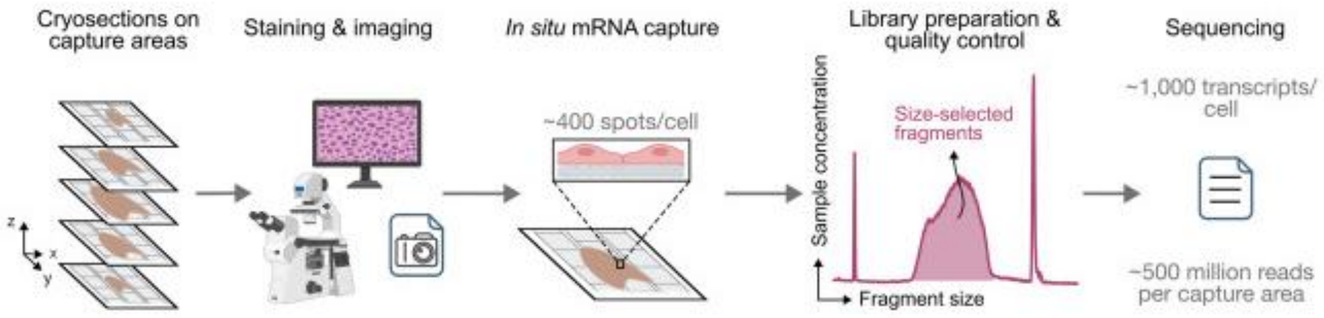
HR funding (8 months, Julie Mignon, AI)

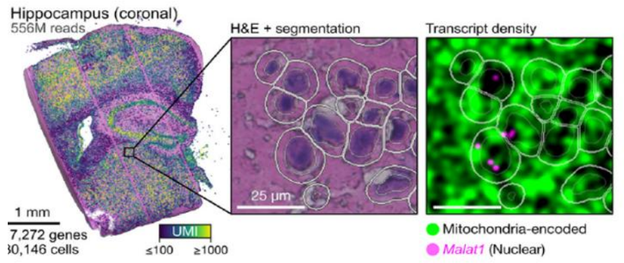
→ Spatial transcriptomic – optimization and implementation of new methods

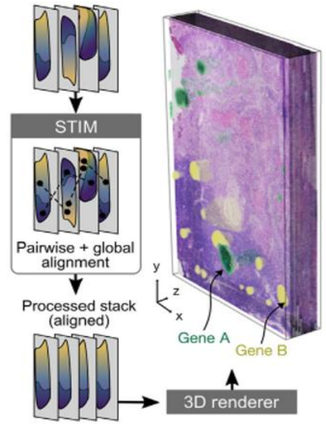
Cell

Open-ST: High-resolution spatial transcriptomics in 3D





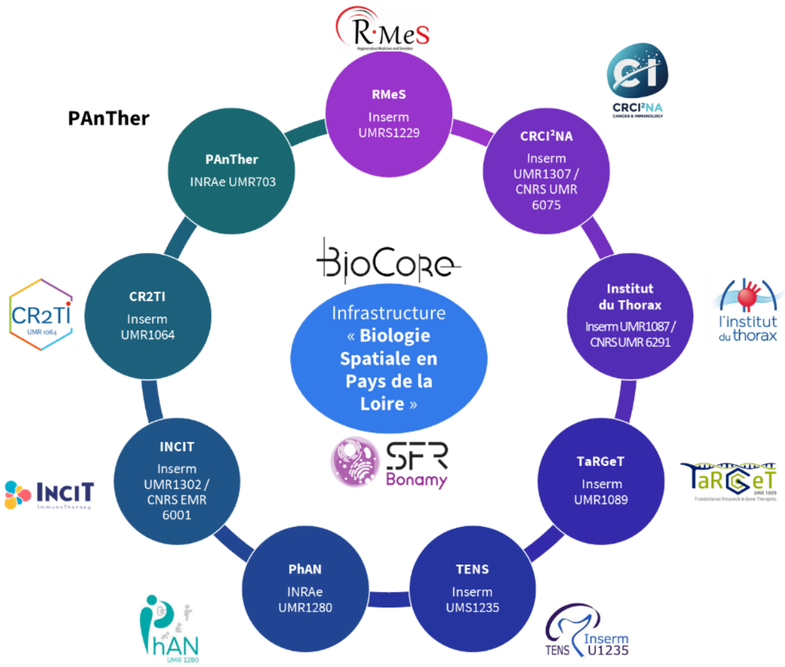




Thank you !

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RÉGION PAYS DE LA LOIRE

MicroPICell

ScM

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Anne-Catherine Chasles
Julien De Lima
Aurélie Doméné
Jérémie Poschmann

CS and COPIL members