

The MGX NGS facility: an overview

Hervé Seitz

January–February 2025

Slideshow accessible for download at:

<https://project.mgx.cnrs.fr/documents/3444>

Public facility vs. private companies

Now routine protocols are available at low cost in private companies (bulk RNA-Seq, Small RNA-Seq, whole genome sequencing, ...).

The MGX NGS
facility: an
overview

Public facility vs.
private companies

Services offered

Future evolution

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Carbon footprint

Services

We need your
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Public facility vs. private companies

Now routine protocols are available at low cost in private companies (bulk RNA-Seq, Small RNA-Seq, whole genome sequencing, ...).

Added value at MGX: R&D, advice (proximity), flexibility.

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Type	Detail	Number of projects in 2023–2024
RNA-Seq	Bulk RNA-Seq	68
	Single-cell RNA-Seq	18
	Low input RNA-Seq	17
	RNA-Seq with rRNA depletion	10
	BRB-Seq	4
	RIP-Seq.	2
	Single-nucleus RNA-Seq	1
	ONT direct RNA seq.	1
DNA-Seq	Classical DNA-Seq	23
	Low input DNA-Seq	7
	ONT DNA seq.	6
	Mixed ONT+Illumina	1
	Low-pass	1
Chromatin	RRBS	5
	ChIP-Seq	2
	Bisulfite seq.	2
	Single-cell ATAC-Seq.	1
	Cut&Run	1
	Cut&Run + ATAC-seq	1

(...)

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Type	Detail	Number of projects in 2023–2024
Archit.	Hi-C	7
	HRSseq	2
	Low input Hi-C	1
sRNAs	Small RNA-Seq	12
Restr. digest	RAD-Seq	27
	DRAK-Seq	5
	ddRAD-Seq	1
Target	Illumina Amplicon-Seq	10
	ONT Amplicon-Seq	1
No library	Ready to load	146 (*)
	Sample checking	2

(*): number of individual libraries

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Equipment:

- ▶ Expected mid-2025: new sequencer (**Illumina NovaSeq X Plus**).

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Equipment:

- ▶ Expected mid-2025: new sequencer ([Illumina NovaSeq X Plus](#)).
- ▶ Recently installed: [10X Genomics Chromium X](#) (—→ high throughput single-cell and single-nucleus genomics; works on fixed samples).

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Equipment:

- ▶ Expected mid-2025: new sequencer ([Illumina NovaSeq X Plus](#)).
- ▶ Recently installed: [10X Genomics Chromium X](#) (—→ high throughput single-cell and single-nucleus genomics; works on fixed samples).
- ▶ Recently installed: [10X Genomics Visium CytAssist](#) (—→ spatial transcriptomics).

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Library preparation: \approx stable (but cost-saving protocols are being developed).

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Library preparation: \approx stable (but cost-saving protocols are being developed).

NovaSeq X Plus sequencer: higher throughput, lower sequencing cost per base.

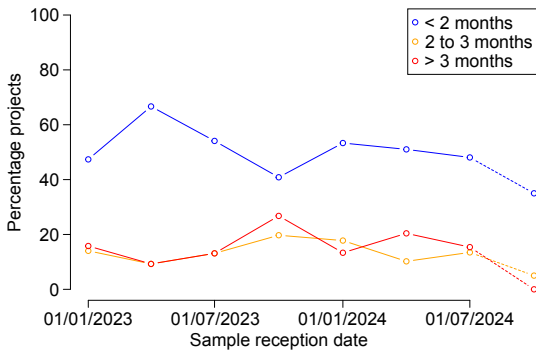
Cost

Library preparation: \approx stable (but cost-saving protocols are being developed).

NovaSeq X Plus sequencer: higher throughput, lower sequencing cost per base.

Bio-informatics services: cost increase following salary rise.

Delays



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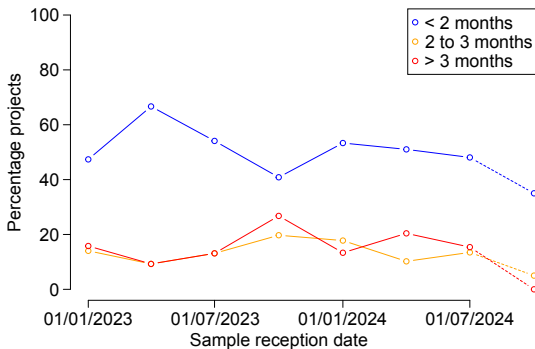
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Expected improvement with NovaSeq X Plus' higher throughput.

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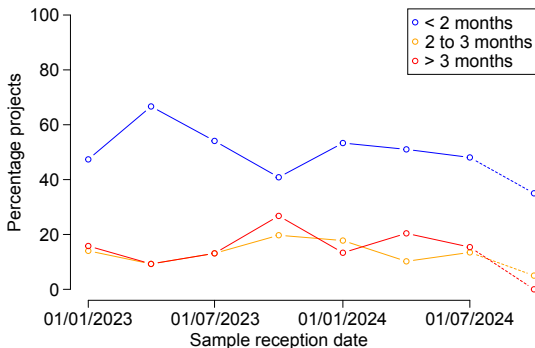
Delays

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Expected improvement with NovaSeq X Plus' higher throughput.

Potential improvement: choosing a reference format (e.g., paired-end 2×150) to fill flow cells rapidly.

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Illumina's new chemistry ("XLEAP") is shipped at room temperature.

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Spatial transcriptomics using 10X Genomics' Visium HD with CytAssist.

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Spatial transcriptomics using 10X Genomics' Visium HD with CytAssist.

- ▶ Input from BioCampus' RHEM facility.

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Spatial transcriptomics using 10X Genomics' Visium HD with CytAssist.

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- ▶ Currently limited to human and murine samples.

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Existing alternative: Curio Biosciences' Trekker (limited to nuclei), not available (yet?) at MGX.

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Bioinformatics analyses:

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Bioinformatics analyses:

- ▶ Full ([Seurat](#)-based or [scverse](#)-based) analysis of single-cell RNA-Seq

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Bioinformatics analyses:

- ▶ Full ([Seurat](#)-based or [scverse](#)-based) analysis of single-cell RNA-Seq
- ▶ Simplification of [the catalogue of offered services](#).

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Yearly [satisfaction survey](#): delays are an issue.

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Yearly [satisfaction survey](#): delays are an issue.

If you are sending your samples elsewhere: why did you not chose MGX ?

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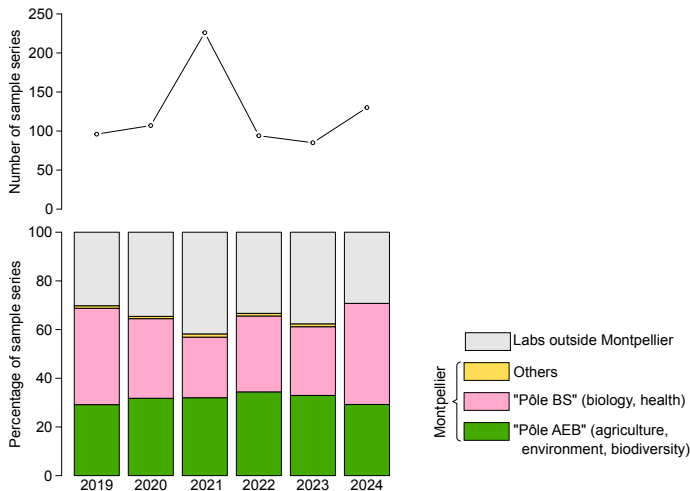
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What about long-read sequencing? Individual labs can purchase ONT sequencers; but PacBio would better fit in a facility (anticipated needs?).

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What about long-read sequencing? Individual labs can purchase ONT sequencers; but PacBio would better fit in a facility (anticipated needs?).

Long-term tendency: biology labs are acquiring expertise in bioinformatics. What will be your needs in the future ?

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