Implementation FAQ: NEPA21 vs Viral in Organoid-on-Chip Workflows

Printable reference and ready to paste into a WordPress accordion.

Question	Short answer	What to emphasize on-chip
What does “defined time zero” mean in a chip workflow?	The perturbation state is established before perfusion/gradients start, so your chip schedule aligns to biology.	If readouts depend on timing (flow start, gradient start, dosing start), avoid a smeared onset—especially for early dynamics (24–72h).
Do teams ever introduce genetic delivery inside the chip?	Most teams keep delivery upstream: perturb off-chip, recover, then load.	Closed microfluidics adds variables (sterility risk, adsorption/clearance, extra handling). Deliver in-device only if the system is designed and validated for it.
Is mosaicism a bug or a feature?	Often a feature: edited and unedited neighbors become internal controls under identical flow/gradients.	Most useful for spatial programs, boundary effects, and relative fitness under stress. Less ideal when you need uniform bulk effects across most/all cells.
When should we switch to viral delivery?	When the next stage requires stable, uniform expression for multi-week runs, lineage tracing, or stable inducible systems.	Use NEPA21 to de-risk targets/constructs, then “graduate” to viral for winners that truly need standardization.
What does QC after the first run look like on-chip?	Compatibility + timing + spatial contrast + signal attribution + shortlist.	Confirm viability/architecture under flow, when phenotype appears, whether effects track with chip conditions, and whether it looks biological vs delivery background.
How should we describe the decision in one sentence?	NEPA21 supports fast, timing-aligned discovery; viral supports long-run uniform tracking and standardization.	Anchor the language to chip requirements: time zero, gradients, spatial contrast, and stability across extended perfusion.