Chip-readiness Decision Check list

Section	Check (✓)	Prompt / Decision	Notes
Define the experiment clock		What is your on-chip time zero (flow start, gradient start, dosing start)?	
Readout sensitivity		Are you measuring early/dynamic responses (24–72h) or long-run outcomes (weeks)?	
Spatial readouts		Do you need mosaicism / internal neighbour controls to interpret gradients or boundaries?	
Uniformity requirement		Do you require near-uniform perturbation across most cells for bulk endpoints?	
Stability requirement		Do you need stable reporters/inducibles across multi-week perfusion?	
Closed microfluidics constraints		Will any genetic delivery occur inside channels/tubing/recirculation loops?	
Payload constraints		Is your payload large or multi-component (multiple guides/reporters/sensors)?	
Biosafety / ops		Do you have biosafety approvals and vector production/QC capacity (if viral is needed)?	
Throughput plan		Will you test many chip conditions (flow × ECM × dosing × co-culture) from one perturbation step?	
QC outputs		What is your go/no-go after run #1 (viability, architecture, flow response, phenotype timing)?	
Decision		**Default strategy:** NEPA21 first for discovery → "graduate" to viral only if stability/uniformity is required.	