

A National Pediatric Preclinical Modelling Program to Advance Precision Oncology for Childhood Cancers in Canada

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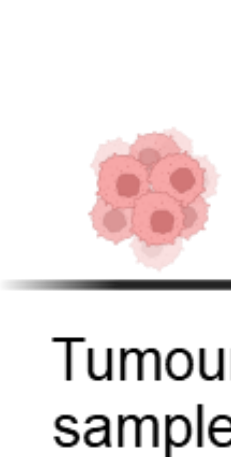
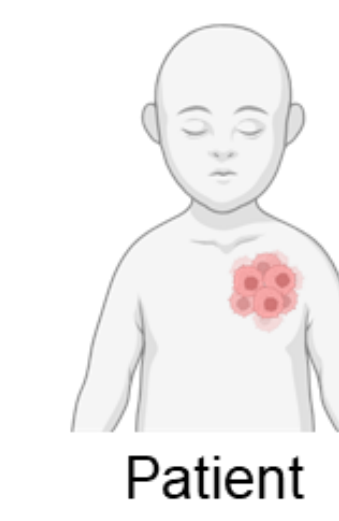
OBJECTIVE

Develop and use preclinical models to identify specific treatments that target the unique makeup of each patient's tumour before proceeding with therapy.



GOALS

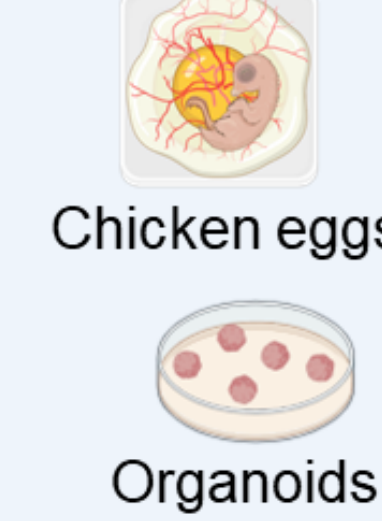
Provide equitable access to this state-of-the-art approach for all high-risk childhood cancer patients in Canada and aid in the delivery of target-based therapeutic options in a clinically relevant timeframe.



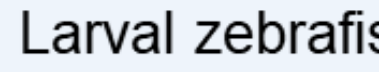
Pediatric Preclinical Modelling Program



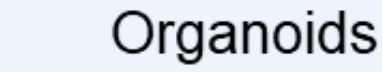
Mouse



Chicken eggs



Larval zebrafish

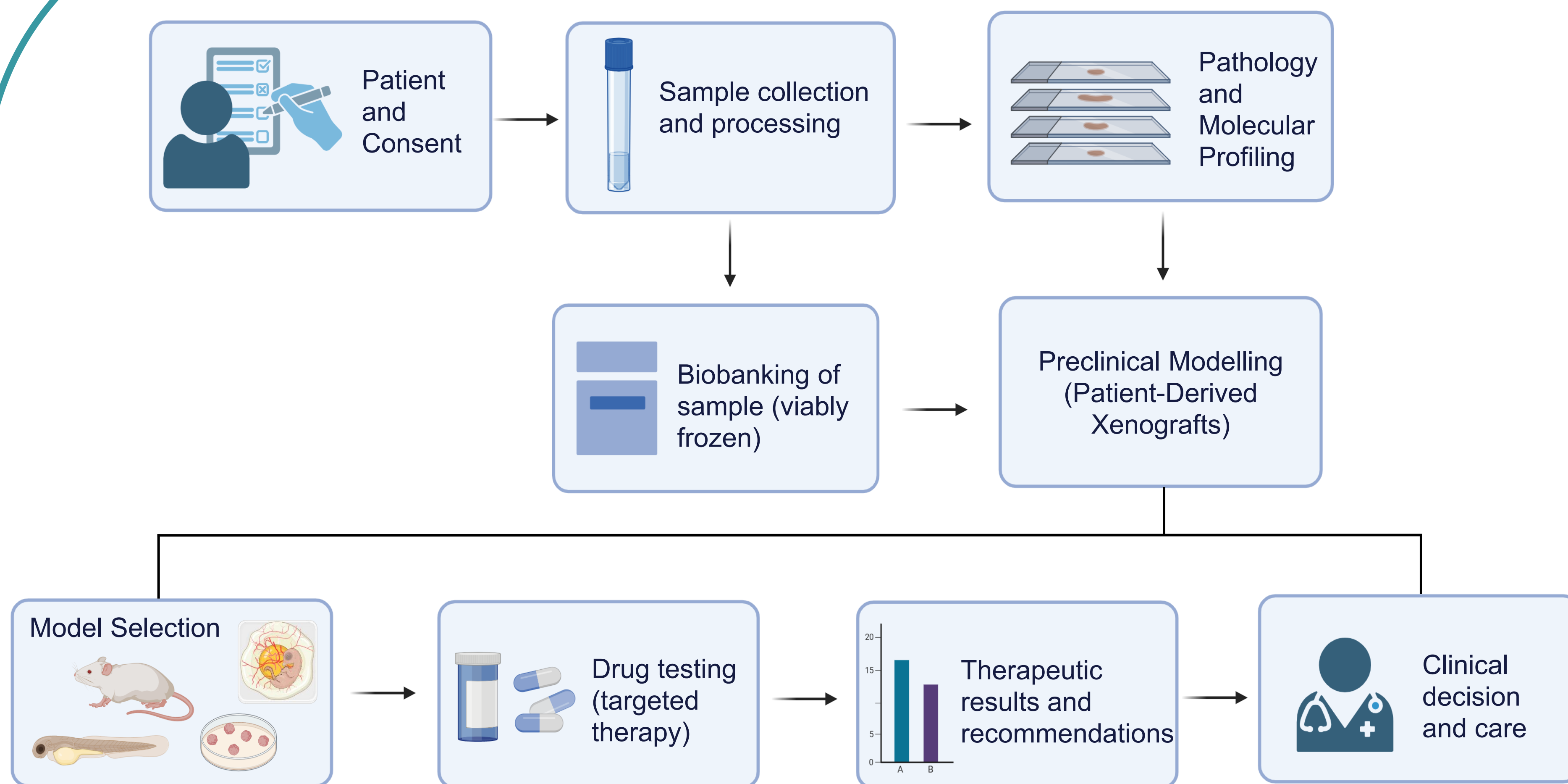


Organoids



Personalized treatment

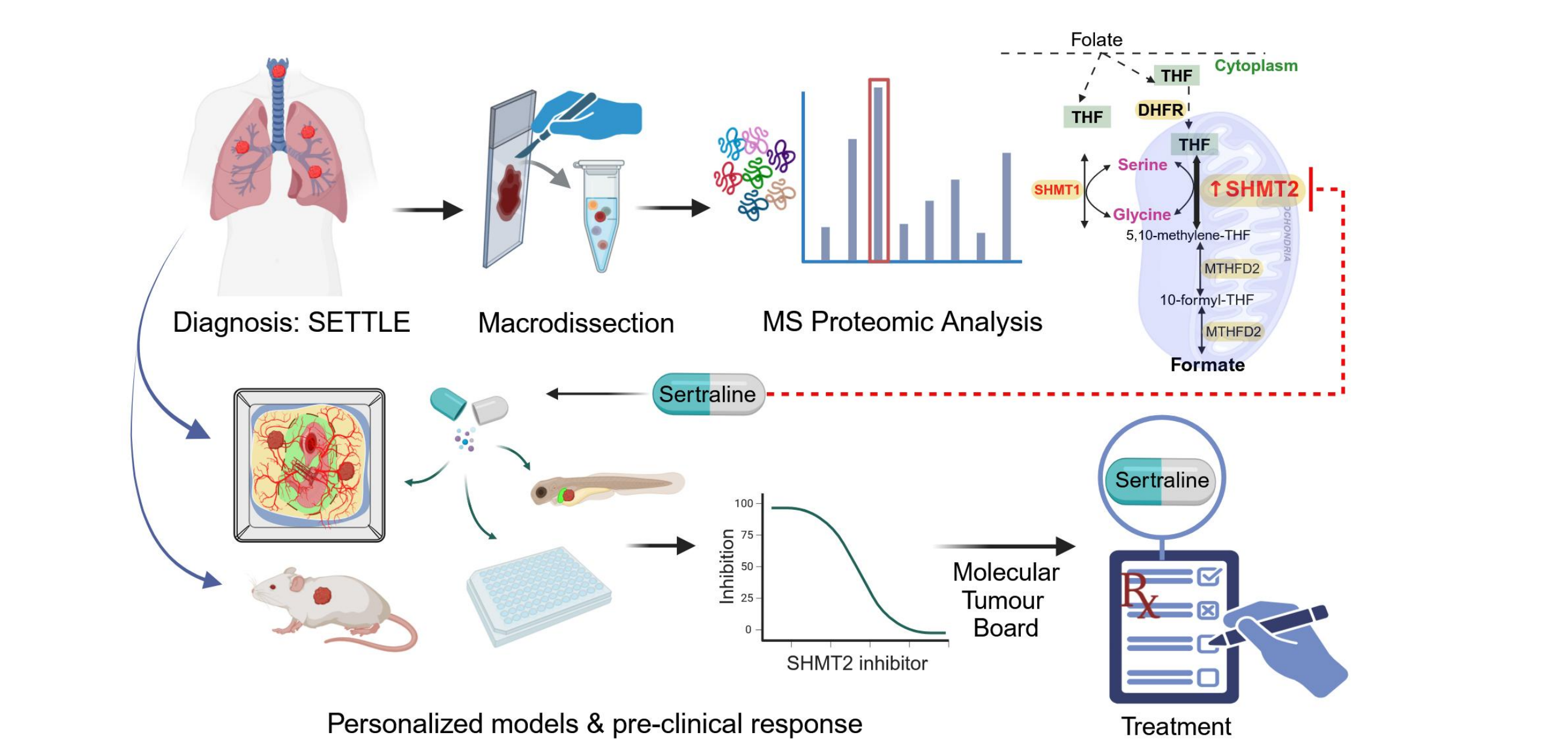
STUDY METHOD



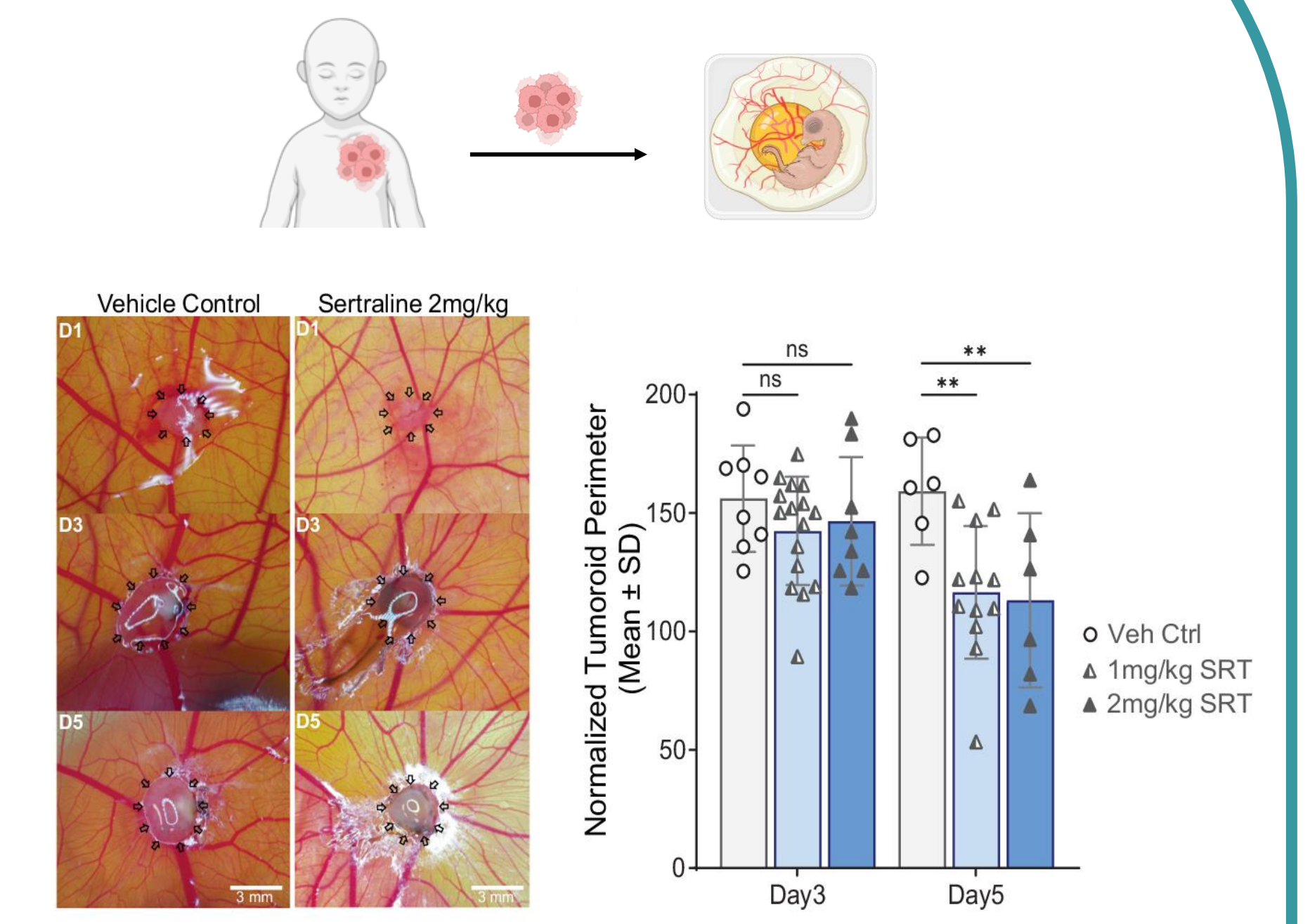
	Mouse	Chicken eggs (CAM)	Larval zebrafish
Time	Months	2-3 weeks	7-10 days
Cells per animal	0.5 - 5x10 ⁶ cells	1 - 5x10 ⁵ cells	100 - 200 cells
Animal per group	2 - 5	5 - 10	35 - 40
Renewable resources (tumour expansion)	✓	✓ (limited)	✗
Throughput	[Increasing bar chart from Mouse to Zebrafish]		
Cost	\$\$\$	\$\$	\$

CASE STUDY: Targeting SETTLE with Sertraline (PMID: 40204966)

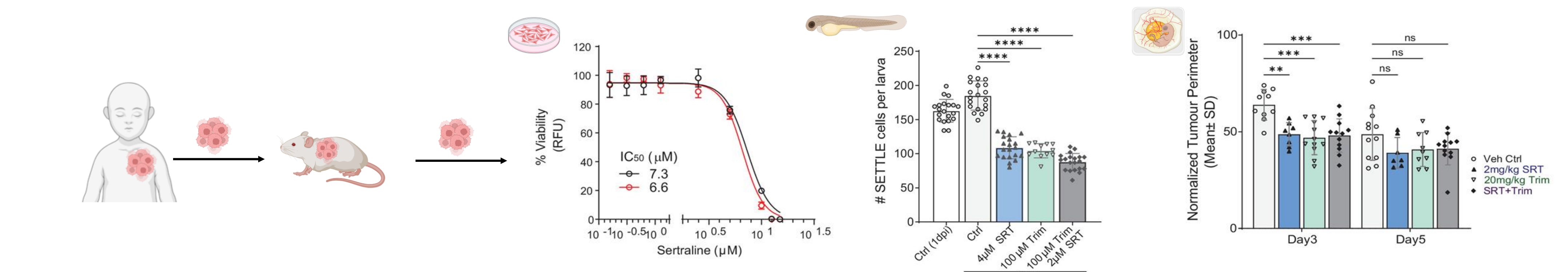
Rare pediatric tumour: Spindle Epithelial Tumour with Thymus-Like Elements (SETTLE)



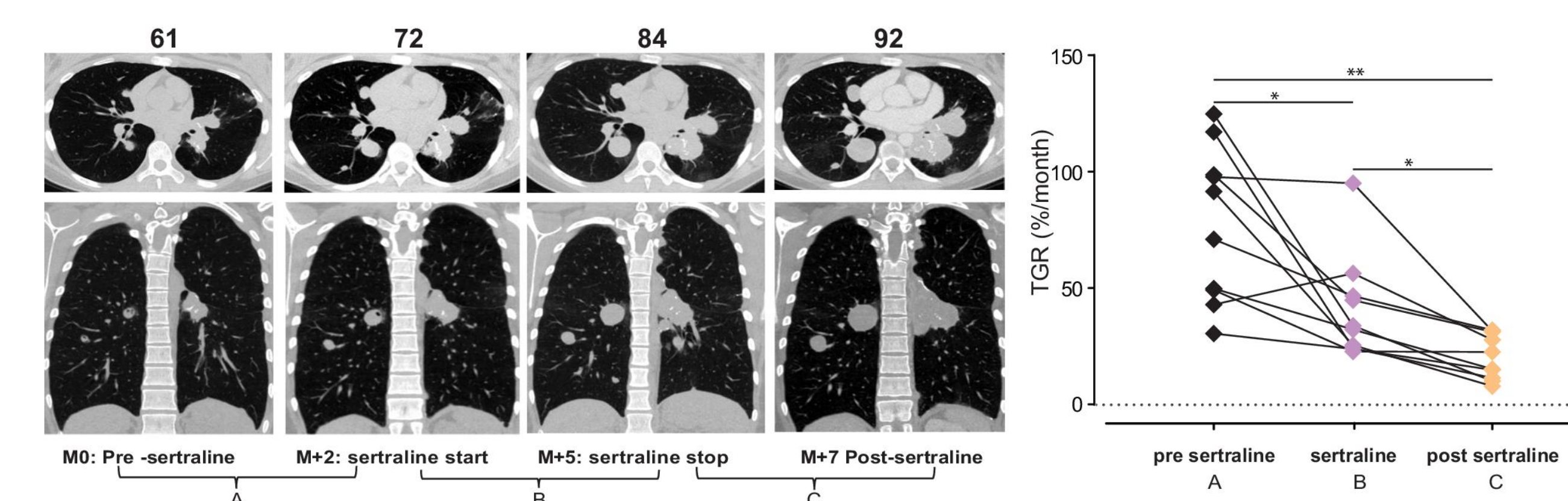
Tumour modelling directly from patient



Preclinical models confirmed response to sertraline (SHMT2 inhibitor) after tumour expansion in mouse



Patient outcome: The patient received sertraline as a third-line therapy, with the tumour exhibiting reduced growth rate



IMPACT/OUTCOMES

- ✓ Standardized preclinical protocols across multiple sites
- ✓ Enabled nationwide patient recruitment for modelling
- ✓ Recruited and expanded the number of preclinical modelling groups across Canada
- ✓ Built capacity to include organoid models as part of the pipeline

Project Timeline: March 2025 – March 2027