

# PROJECT COMPLETION REPORT — P 6126

## 1. Administrative Information

Item	Detail
<b>Project Title</b>	Role of molecular sub-typing in prognostication, recurrence and long-term survival in patients undergoing surgery for medulloblastoma
<b>Principal Investigator (PI)</b>	<b>Dr Ganesh Divakar</b> , Assistant Professor, Department of Neurosurgery, SCTIMST
<b>Co-Investigator</b>	<b>Dr Arwin Das Prabhu</b> , Senior Resident, Neurosurgery
<b>Project Type</b>	Intramural Fund for Consultants
<b>Budget Sanctioned</b>	INR 2,00,000 (Two lakhs)
<b>Project Code</b>	6126
<b>Duration</b>	6 months (Dec 2023 – Nov 2024)
<b>IEC Approval</b>	IEC/2027 dated 12 May 2023
<b>Date of Reagent Procurement</b>	March 2024

## 2. Background & Objectives

Sonic-hedgehog (SHH), WNT and non-WNT/SHH molecular groups determine outcome in medulloblastoma, but Indian data remain sparse.

**Primary Objective:** To identify the distribution of molecular sub-types among patients operated at SCTIMST (2010–2020) and correlate each subtype with overall survival (OS) and recurrence-free survival (RFS).

**Secondary Objective:** To evaluate the pragmatic feasibility of immunohistochemistry (IHC)-based classification in archived paraffin blocks.

## 3. Methodology

- **Study design:** Retrospective observational cohort.
- **Study population:** 100 most recent histology-confirmed medulloblastomas operated 2010–2020 (age range 3 – 45 y).
- **Inclusion criteria:** Availability of well-fixed paraffin block and follow-up data  $\geq$  24 months.
- **Exclusion criteria:** Inadequate tissue, lost to follow-up.
- **IHC panel:** Synaptophysin, INI-1,  $\beta$ -catenin, YAP-1, GAB-1 and Filamin-A.
- **Laboratory:** IHC performed in the departmental Immunohistochemistry Laboratory with standard antigen-retrieval and polymer-HRP detection.
- **Outcome variables:** Molecular class (WNT, SHH, non-WNT/SHH), OS, RFS, demographic and radiological covariates.
- **Statistics:** Kaplan–Meier curves; log-rank test; multivariate Cox regression (SPSS v29).

## 5. Results

Parameter	Value
Blocks screened	109
IHC panel completed successfully	65
Unclassifiable after repeat IHC	23
Inadequate tissue / technical failure	21
<b>Final cohort analysed</b>	<b>65</b>

**Molecular distribution** (n = 65): WNT = 10 (15 %), SHH = 22 (34 %), non-WNT/SHH = 33 (51 %).

Median follow-up = 56 months. Five-year OS: WNT 92 %, SHH 78 %, non-WNT/SHH 62 % (log-rank p = 0.031). Recurrence rates mirrored OS.

## 6. Discussion & Conclusion

The study provides the first single-centre Indian dataset linking IHC-based sub-typing with long-term outcome. Distribution parallels Western series but with a marginally higher non-WNT/SHH fraction, possibly reflecting referral bias. IHC proved cost-effective (INR 3,000 per case) yet left 32 % unclassified, underscoring the need for supplementary gene-expression or methylation profiling.

## 7. Future Directions

Manuscript draft is underway for submission to indexed journals. A prospective extension employing NanoString-based methylation panel is to be planned in collaboration with the Molecular Pathology/Biochemistry Unit.



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