study, we prospectively validate the prognostic capabilities of a DNA methylation-based predictor and multiomic molecular groups (MG) of meningiomas. Methods: DNA methylation profiles were generated using the Illumina EPICarray. MG were assigned as previously published. Performance of our methylation-based predictor and MG were compared with WHO grade using generalized boosted regression modeling by generating time-dependent receiver operating characteristic (ROC) curves and computing area under the ROC curves (AUCs) along with their 95% confidence interval using bootstrap resampling. Results: 295 meningiomas treated from 2018-2021 were included. Methylation-defined high-risk meningiomas had significantly poorer PFS and OS compared to low-risk cases ($p<0.0001$). Methylation risk increased with higher WHO grade and MG. Higher methylome risk (HR 4.89, 95%CI 2.02-11.82) and proliferative MG (HR 4.11, 95%CI 1.29-13.06) were associated with significantly worse PFS independent of WHO grade, extent of resection, and adjuvant RT. Both methylome-risk and MG classification predicted 3- and 5-year PFS and OS more accurately than WHO grade alone ($\Delta AUC=0.10-0.23$). 42 cases were prescribed adjuvant RT prospectively although RT did not significantly improve PFS in high-risk cases ($p=0.41$). Conclusions: Molecular profiling outperforms conventional WHO grading for prognostication in an independent, prospectively collected cohort of meningiomas.

## F.4

### Anatomical assessment and comparative analysis of ventricular access points in pterional approach: a cadaveric study

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Background: In early-stage transsylvian aneurysm surgery, achieving brain relaxation is crucial for the safe exposure of aneurysms; however, in cases of tight, hemorrhagic brains, ventricular drainage is often required. Although Paine/Samson initially proposed a ventricular access point in the frontal horn of the lateral ventricle, and numerous points and techniques have been described since, their consistency and success rates have not undergone rigorous evaluation through comparative cadaveric anatomical studies. Methods: We injected 2 cc agar-agar solutions with distinct colors into the lateral ventricles of twelve cadaveric brains, utilizing four described points, followed by refrigeration at 4°C for one hour for each injection. Next, the brains were sectioned in the coronal plane at 2 cm intervals for evaluation. We assessed the efficacy of the injections in reaching the ventricles and measured the ventricular dimensions, in addition to calculating the Evans' index for each brain. Results: Injections at Paine/Samson's point achieved a 100% success rate, followed by Hyunn's point with a 91.6% success rate. The success rates at Temporal point and Park point were 83.3% and 58.3%, respectively. Conclusions: We emphasize the significance of direct ventricle puncture technique and our findings indicate that the classical Paine/Samson point is the most reliable among the evaluated methods.

## F.5

### A neurotransmitter-dependent mechanism of ependymal cell activation: Insights into a novel therapeutic target for spinal cord injury

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Background: The drivers that activate endogenous ependymal-derived neural stem/progenitor cells (epNSPCs) remain unknown. Understanding the mechanisms that govern the biology of these cells is critical in developing a therapeutic strategy to harness their regenerative potential after injury. Methods: FoxJ1-CreER-tdTomato reporter mice were used for epNSPC lineage tracing. A conditional genetic knock-out mouse line of glutamate-subtype AMPA receptor (AMPAR) subunits in epNSPCs was generated. Electrophysiological properties were assessed using single cell patch clamp and slice culture recordings. For in vivo studies, mice underwent cervical SCI. To examine the effect of positive modulation of AMPARs, mice received the ampakine CX546 or vehicle and underwent electrophysiological testing, behavioural assessment and spinal cord extraction. Results: Glutamate excitotoxicity, a hallmark in the pathogenesis of acute SCI, drives epNSPCs activation via AMPARs. Genetic knock-out of AMPARs in epNSPCs inhibits their activation following SCI. Positive pharmacological modulation of AMPARs after SCI enhances the migration and differentiation of epNSPCs, increases neuronal sparing and improves long-term locomotor/forelimb function. SCI decreases the excitability of corticospinal tract projections, which is improved with positive AMPAR modulation. Conclusions: Glutamatergic signaling via AMPARs is an important mediator of epNSPC activation after injury. Pharmacological targeting of this mechanism can be used to enhance endogenous regeneration and improve recovery post-SCI.

## F.6

### Opportunities for improvement: understanding drivers of emergency department visits within 90 days of posterior spinal decompression surgery

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Background: Canadian Emergency Departments (EDs) are overburdened. Understanding the drivers for postoperative patients to attend the ED allows for targeted interventions thereby reducing demand. We sought to identify "bounce back" patterns for subsequent QI initiatives. Methods: From April 1, 2016 to March 31, 2022, all provincial ED datasets (EDIS, STAR, Meditech) identified patients presenting within 90 days post-spine surgery. Using Canadian Classification of Health