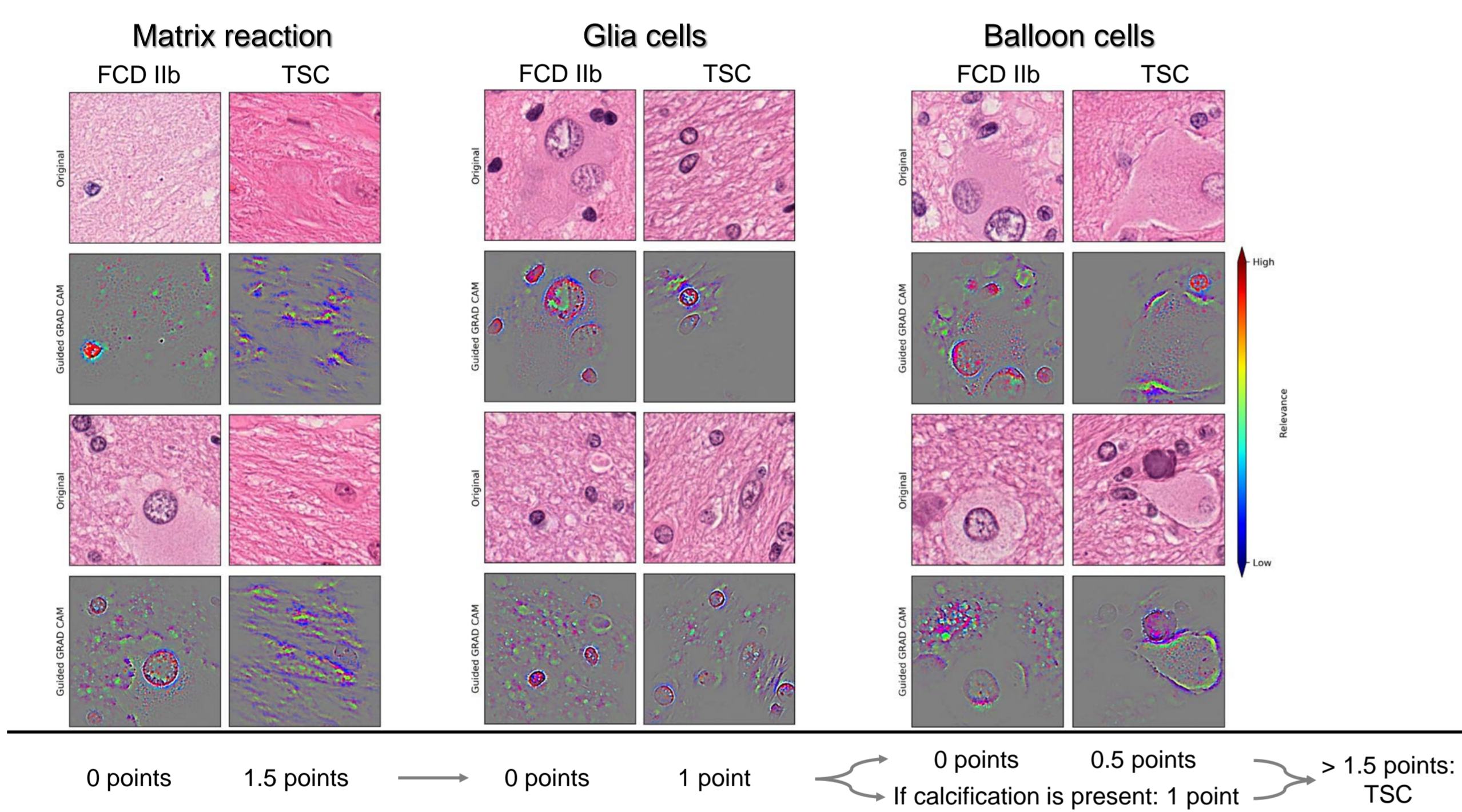
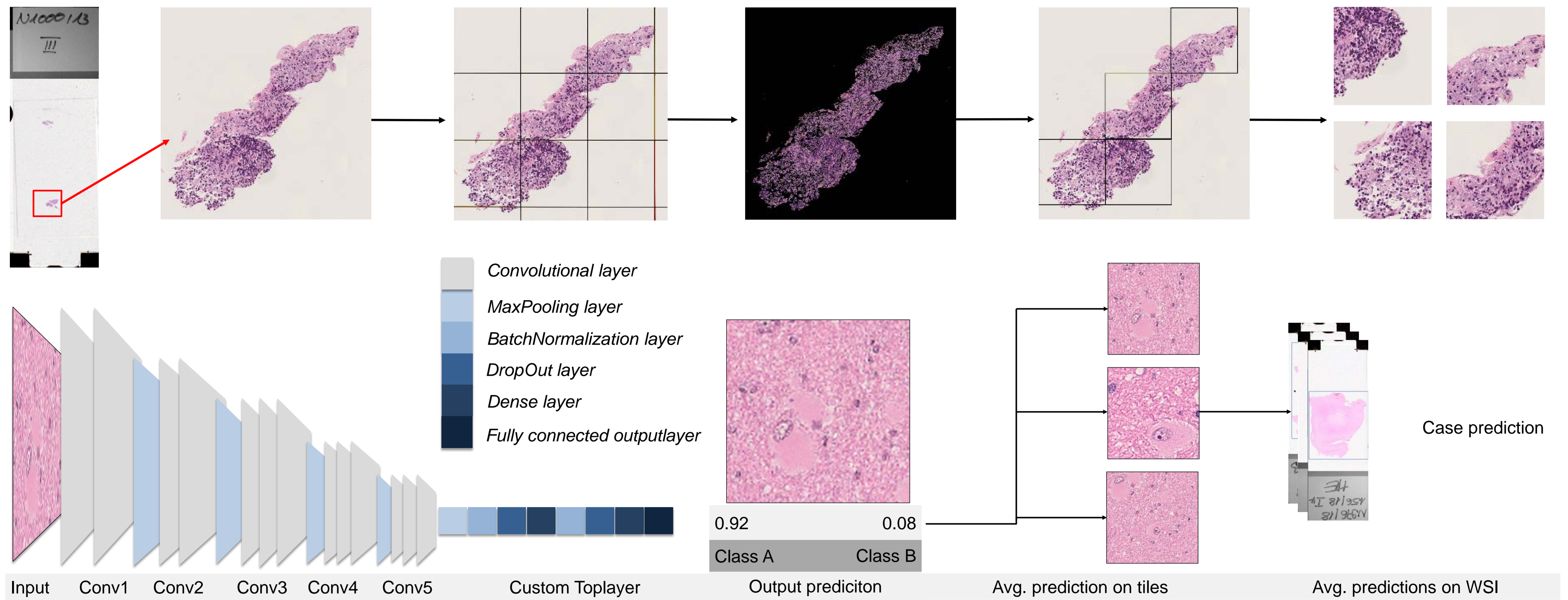
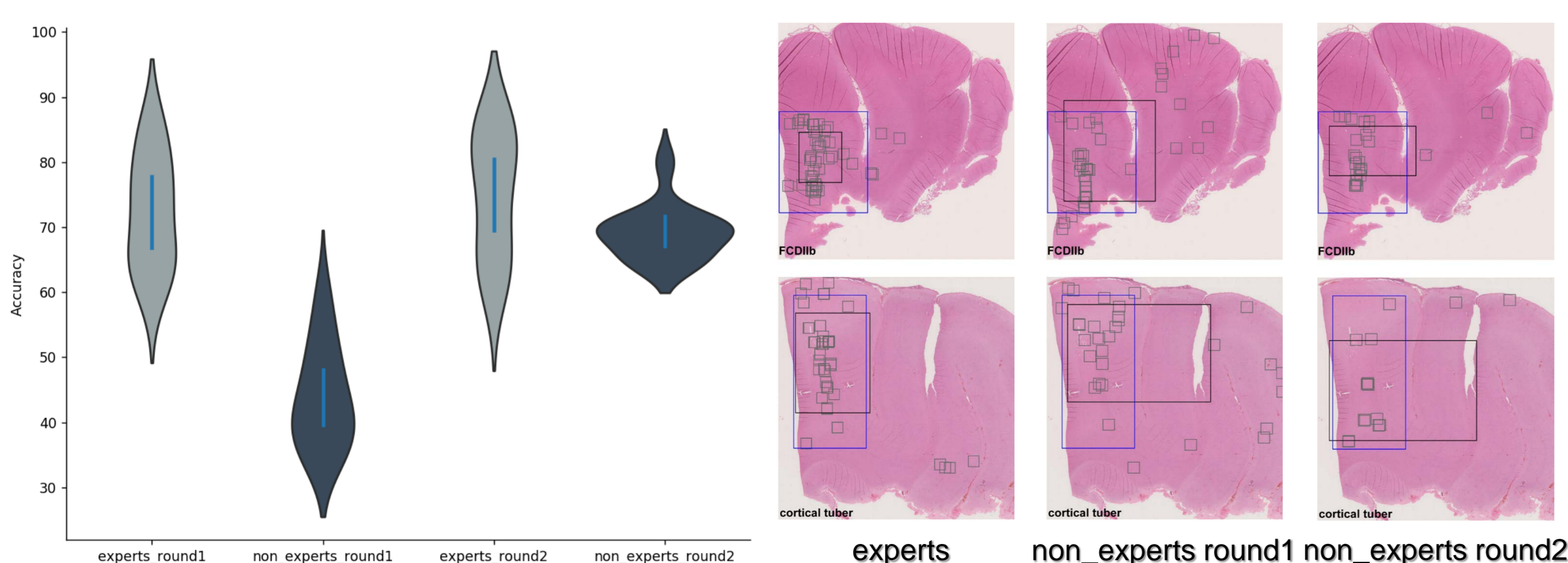


On the verge of clinical outcome prediction: humans teaching machines - machines teaching humans

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We have demonstrated that the classification among two histomorphologically undiscernible entities is possible. In addition, we have visualized the histomorphological features the CNN uses to discern FCD IIb (focal cortical dysplasia type IIb) and TSC (tuberous sclerosis complex) and could use these features to develop and validate a decision making algorithm for brightfield microscopy. Our future work will focus on aiding diagnosis based on well-trained and sophisticated deep learning algorithms implemented in online tools, further visualization as well as etiologic discrimination through unsupervised clustering.



Pituitary adenomas have estimated prevalence of 16.7% and account for approximately 25% of all surgical resections for CNS tumors.

After surgical resection of pituitary gland tumors the time point until tumor progress/ recurrence makes a follow-up surgery necessary cannot be foreseen. So there is an urgent clinical demand to predict which patients need shorter control examination intervals.

Classification of probability of recurrence

Probability for follow-up surgery 7%

Probability for follow-up surgery 93%

Our ongoing research indicates that clinical outcome prediction of yet unpredictable events is possible. In a first step we have trained a classification model to predict the probability of recurrence with a dataset of whole slide images from 200 patients.

In a second step we trained a regression model to predict the time point of follow-up surgery.

Time point of follow-up surgery