

# Survival-time dependent increase in neuronal IL-6 and astroglial GFAP expression in fatally injured human brain tissue

Florian Trautz<sup>1,#</sup>, Heike Franke<sup>2,#</sup>, Simone Bohnert<sup>3</sup>, Niels Hammer<sup>4-6</sup>, Wolf Mueller<sup>7</sup>, Ruth Stassart<sup>7</sup>, Rexson Tse<sup>8</sup>, Johann Zwirner<sup>4</sup>, Jan Dreßler<sup>1</sup>, Benjamin Ondruschka<sup>1,\*</sup>

<sup>1</sup> Institute of Legal Medicine, Medical Faculty University of Leipzig, Leipzig, Germany

<sup>2</sup> Rudolf Boehm Institute of Pharmacology and Toxicology, Medical Faculty University of Leipzig, Leipzig, Germany

<sup>3</sup> Institute of Forensic Medicine, University of Würzburg, Würzburg, Germany

<sup>4</sup> Department of Anatomy, University of Otago, Dunedin, New Zealand

<sup>5</sup> Department of Orthopedic and Trauma Surgery, University Hospital of Leipzig, Leipzig, Germany

<sup>6</sup> Fraunhofer IWU, Dresden, Germany

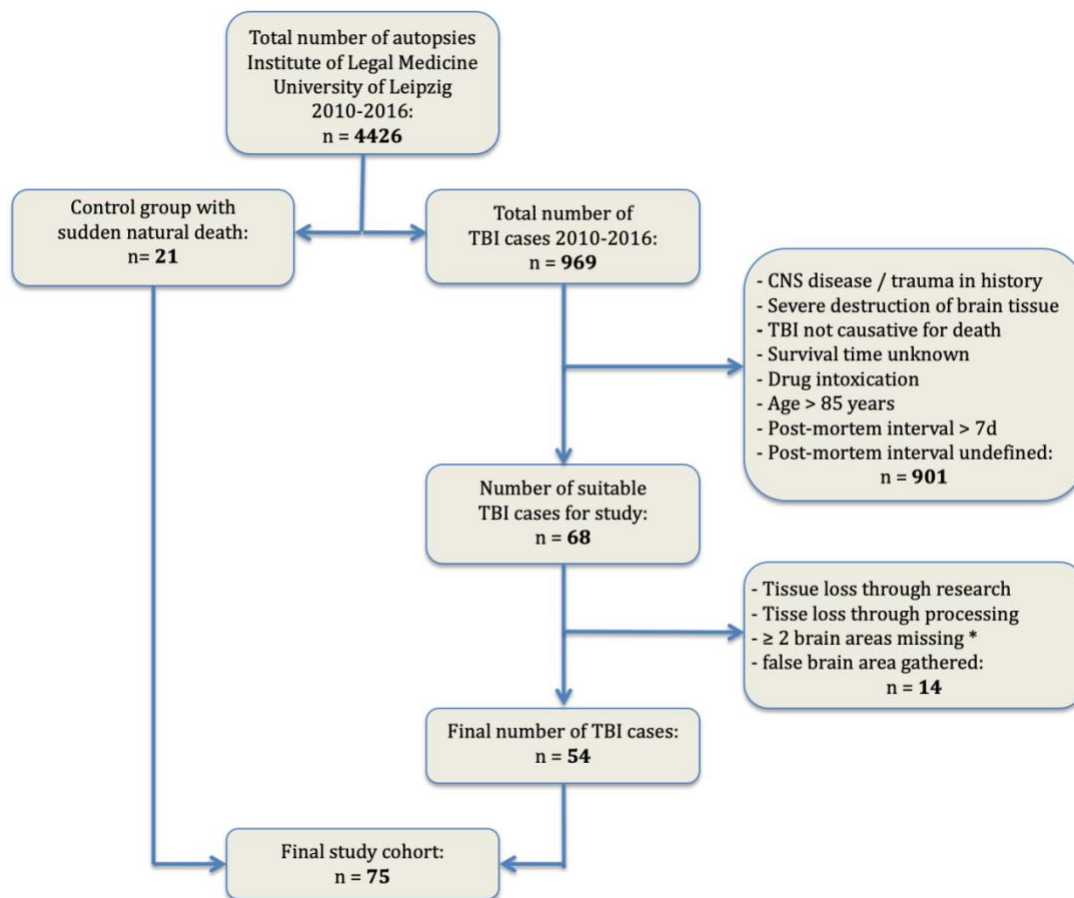
<sup>7</sup> Department of Neuropathology, University Hospital of Leipzig, Leipzig, Germany

<sup>8</sup> Department of Forensic Pathology, LabPLUS, Auckland City Hospital, Auckland, New Zealand

# Both authors contributed equally to this work.

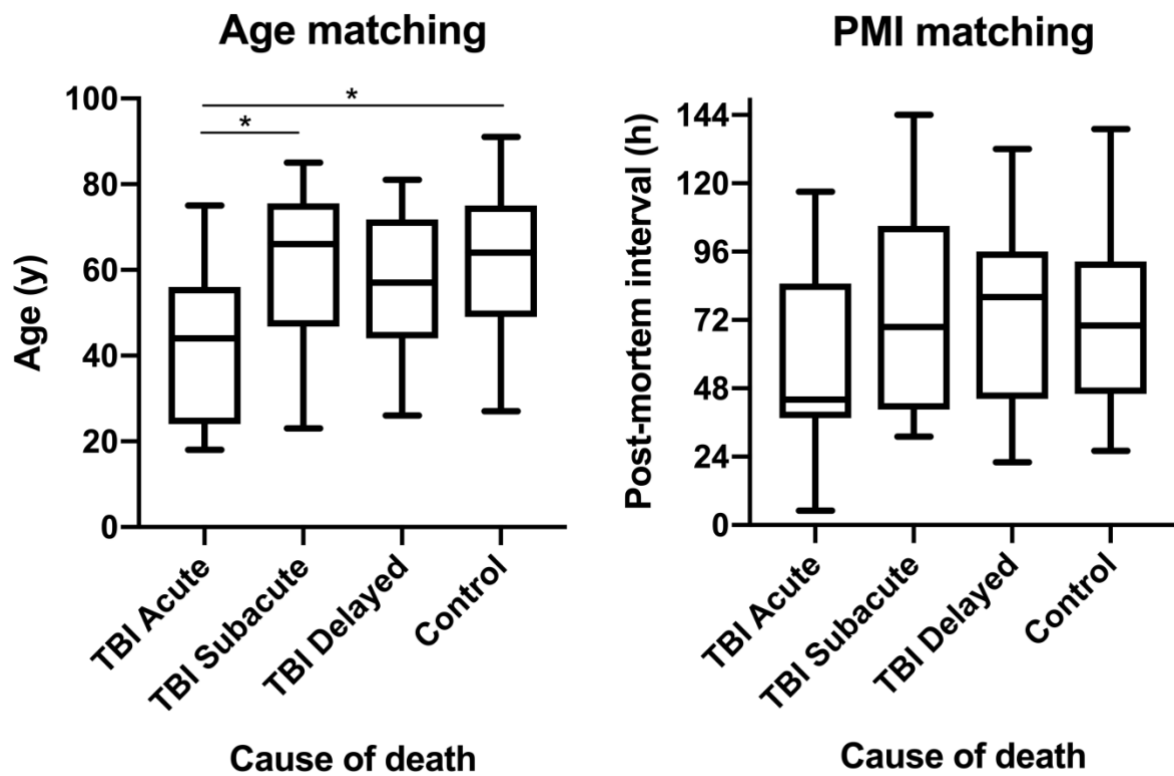
\* **Corresponding Author:** PD Dr. med. Benjamin Ondruschka  
Medical Faculty University of Leipzig  
Institute of Legal Medicine  
Johannisallee 28  
D-04103 Leipzig, Germany  
phone: +49 (0) 0341-9715152  
fax: +49 (0) 341-9715109  
mail: benjamin.ondruschka@medizin.uni-leipzig.de

**Electronic supplementary material:**



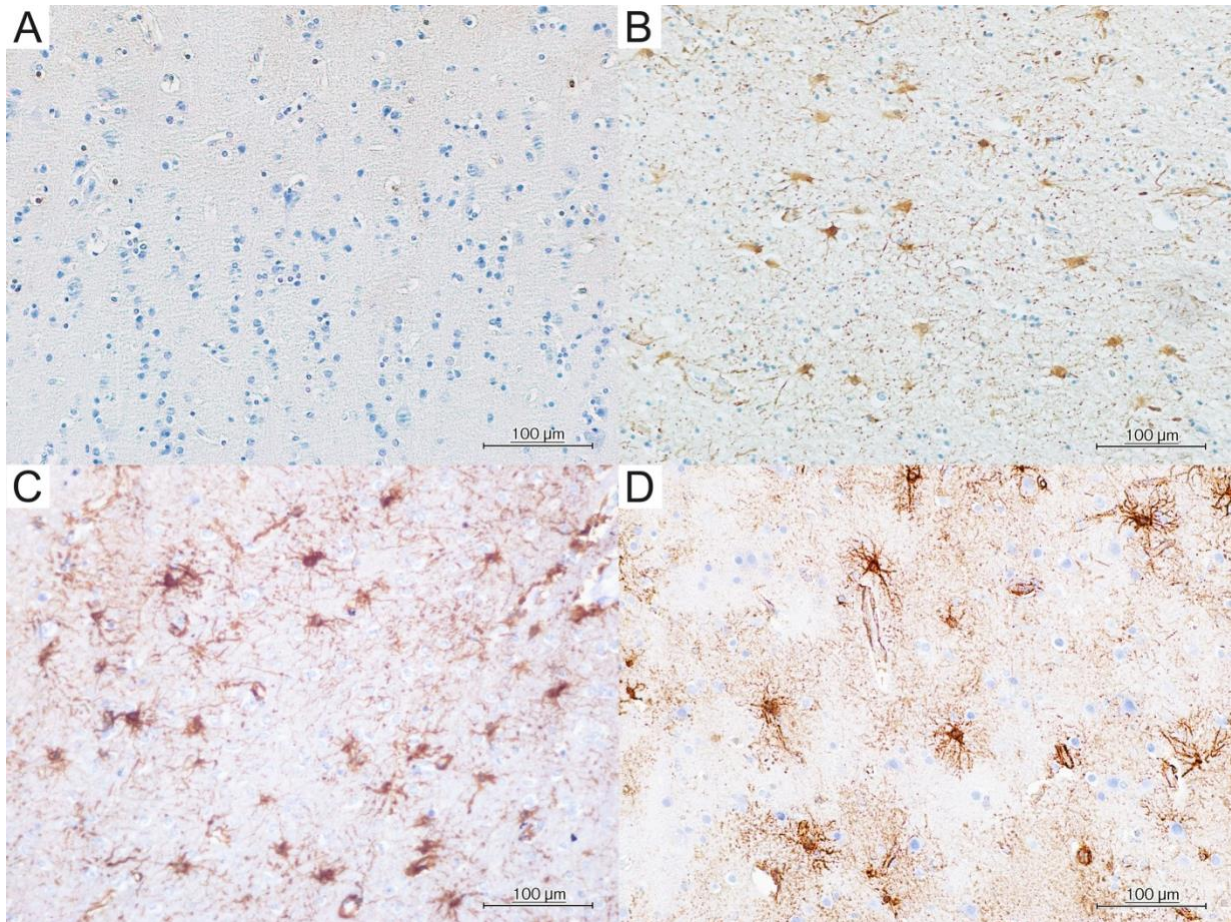
**Supplemental figure 1:** Workflow for traumatic brain injury study case selection out of the total of autopsies done at the Institute of Legal Medicine of the University of Leipzig in a 7-year timeframe.

CNS, central nervous system; TBI, traumatic brain injury; \*, TBI cases were excluded for analysis if not at least two brain regions out of the contralateral cortex, hippocampus or cerebellum were available next to the pericontusional zone per case.



**Supplemental figure 2:** Box plot diagrams displaying the comparison between age of the deceased (left) and post-mortem interval (PMI, right) of the cases in respect to the survival time and cause of death. The outlines of the boxes indicate the 25% and 75% percentile, the solid black line the median. End of lines show the minima and maxima.

TBI, traumatic brain injury; y, years, h, hours; \*,  $p < 0.05$  using Kruskal-Wallis test followed by *post hoc* Dunn's test.



**Supplemental figure 3:** Different grades of staining intensity of GFAP positive astrocytes with exemplified pictures for grade 0 – absent staining (A); grade 1 – light marker staining on cell bodies (B); grade 2 – moderate staining with some blunt processes (C) and grade 3 – strong marker expression with widely spread processes (D). Scale bars: 100 µm.