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FENS Forum 2022
9-13 July 2022 | Paris, France

**Table of contents:**


- **Poster Session 03**:
  - Poster Session 03 - Section: Functional Connectivity and Cognition
  - Poster Session 03 - Section: The Social Brain: From Genes to Behavior
  - Poster Session 03 - Section: Midbrain and Forebrain Function in Stress and Emotion
  - Poster Session 03 - Section: Development of Cortical Circuitry
  - Poster Session 03 - Section: Neurons and Glia: Cell Excitability
  - Poster Session 03 - Section: Synaptic Function and Neurotransmission
  - Poster Session 03 - Section: Glutamate Receptors and Their Modulation
  - Poster Session 03 - Section: Astrocytes and Microglia
  - Poster Session 03 - Section: Multiple Sclerosis: Biomarkers, Pathogenesis and Therapies
  - Poster Session 03 - Section: Amyotrophic Lateral Sclerosis
  - Poster Session 03 - Section: Neuroimmune Mechanisms Mediating Dysfunction in Autism
  - Poster Session 03 - Section: Gut-Brain Axis and the Modulation of Appetite
  - Poster Session 03 - Section: Brain Computer Interface
  - Poster Session 03 - Section: Cochlear & Subcortical Auditory Processing
  - Poster Session 03 - Section: Coding in Visual Cortex
  - Poster Session 03 - Section: Oscillations in the Brain

- **Poster Session 04**:
  - Poster Session 04 - Section: Mental Health, Addiction and Obsessive-Compulsive Disorder
  - Poster Session 04 - Section: Neural Correlates of Social Interactions
  - Poster Session 04 - Section: Attention and Perception
  - Poster Session 04 - Section: Neurostimulation and Neurofeedback
  - Poster Session 04 - Section: Novel Neural Interfaces for Stimulation & Tracking
  - Poster Session 04 - Section: Ion Channels & Excitability
  - Poster Session 04 - Section: Astrocyte Function and Dysfunction
  - Poster Session 04 - Section: Epigenetics of the Nervous System
  - Poster Session 04 - Section: The Brain and Metabolism
  - Poster Session 04 - Section: Brain Hypoxia-Ischemia and Inflammation
  - Poster Session 04 - Section: Spinal Cord, Peripheral Nerve Injury and Regeneration
  - Poster Session 04 - Section: Traumatic Brain Injury
  - Poster Session 04 - Section: Cerebellar Computation and Motor Learning
  - Poster Session 04 - Section: Cluster 90: Movement: spinal cord and motor neurons
  - Poster Session 04 - Section: Somatosensory Processing
  - Poster Session 04 - Section: Visual System, From Retina to Cortex
  - Poster Session 04 - Section: Alzheimer's Disease and Neurodegeneration
  - Poster Session 04 - Section: Risk Factors and Treatment of Mood Disorders
  - Poster Session 04 - Section: Epilepsy and Epileptogenesis
  - Poster Session 04 - Section: Neurodevelopmental Disorders

- **Poster Session 05**:
  - Poster Session 05 - Section: Spatial Navigation and Memory
  - Poster Session 05 - Section: Temporal Cognition, Rhythms & Attention
  - Poster Session 05 - Section: Decision-Making
  - Poster Session 05 - Section: Reward & Addiction Mechanisms
  - Poster Session 05 - Section: Animal Models of Psychiatric Disorders and Preclinical Pharmacology
  - Poster Session 05 - Section: Alzheimer's Disease: From NeuroInflammation to Neuroprotection
  - Poster Session 05 - Section: Neuroinflammation and Autoimmunity
  - Poster Session 05 - Section: Glial Cells and Myelination
  - Poster Session 05 - Section: Evo-Devo - Evolutionary Developmental Neuroscience
  - Poster Session 05 - Section: Pluripotent Stem Cells in Disease Modeling
  - Poster Session 05 - Section: Cellular Architecture of the Brain
  - Poster Session 05 - Section: Interneurons and Dendrites
  - Poster Session 05 - Section: Neuronal Interactions and Synchronization
  - Poster Session 05 - Section: Multisensory Integration
  - Poster Session 05 - Section: Modeling the Brain
  - Poster Session 05 - Section: Emerging Technologies & Methods
  - Poster Session 05 - Section: Neuropathic Pain, Analgesia, & Therapeutics

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# Poster Session 07

FENS Forum 2022
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# ON THE IMPORTANCE OF HIPPOCAMPAL SEGMENTATION FOR THE NEURAL MAPPING OF MEMORY: EVIDENCE FROM A LARGE-SCALE STUDY OF NEURAL ARCHITECTURE IN HEALTHY ADULTS

**POSTER SESSION 07 - SECTION: SPACE AND MEMORY**

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The hippocampus (HC) is traditionally considered the key neuroanatomical hub responsible for memory. However, previous MRI studies that aimed to relate volumetric hippocampal measures to associative memory (AM) performance have yielded mixed results. In the current study, we aimed to reevaluate these findings in a large sample of young healthy participants ($N$ = 246; age $M$ = 24.95, $SD$ = 4.58; 56% female). Participants were scanned with 3T MAGNETOM Prisma using a 64-channel head coil, followed by the AM assessment in the lab setting. To maximize the scope of AM assessment, we employed four paired-associate tasks of various stimuli modalities (faces, words, scenes) and outcome measure types (recognition, recall). Synthetic T1-weighted images were produced out of relaxometry parameter maps, after which volumetric measures were calculated using FreeSurfer. The whole HC volume showed no correlation with any of the memory measures. However, further segmentation of HC into its functional and anatomical subfields (Parasubiculum, Presubiculum, Subiculum, CA1, CA2/3, CA4, GC-DG, HATA, Fimbria, Molecular layer, Hippocampal fissure, Hippocampal tail) showed scattered yet consistent patterns of significant correlations between different subfield volumes and memory outcomes. The results suggest that distinctive contributions of HC subfields may lead to a null effect when the whole HC volume is considered, thus demonstrating that drawing conclusions based on the volumetric measures of neural macrostructures can be misleading. The results highlight the importance of in-depth segmentation for neural mapping.