

Day 1

SPARC Workshop Cum International Symposium on Neuroanatomy and Diffusion MR Imaging based biomarker for TBI

December 05-07, 2023

Organizers : Prof. BV Rathish Kumar, Prof. Walt Schneider, Prof. S.K. Pathak

- Registration (9:00 AM – 9:30 AM)
- Inaugural (9:30 AM – 9:45 AM)
- Tea (9:45 AM – 10:00 AM)
- Lecture by **Walt** on TBI for this conference (45 + 5 minutes) (10:00 – 11:00)
- Introduction to Neuroanatomy (60 minutes) – **Sudhir (11:12)**
 - Highlighting white matter tracts.
 - Essential features of the Cortex and subcortical regions.
 - Identifying features in diffusion MRI for tract location.
 - Introduction to software: FREESURFER, FSL.
 - Demo and exercises for cortical area identification.
- Tea 12:00 – 12:15
- Fundamental MRI principles (60 minutes)- **Durgesh (12:15-13:15)**
 - Larmor Frequency,
 - Resonance,
 - Tissue contrast T1, T2,
 - Image formation k-space
- **LUNCH 13:15 – 14:30**
- Introduction to Diffusion MR Imaging (60 minutes) – **Sudhir 14:30 – 16:00**
 - Basis of Diffusion MRI
 - Mathematical Modeling of Diffusion Signal
 - Imaging Protocol used for Model.
 - Parametric and non-Parametric models (introduction)
- TEA BREAK 16:00 – 16:15
- Preprocessing of DMRI /Demos (16:15 – 17:30)
- Day 1 Break

Day 2

SPARC Workshop Cum International Symposium on Neuroanatomy and Diffusion MR Imaging based biomarker for TBI

December 05-07, 2023

Organizers : Prof. BV Rathish Kumar, Prof. Walt Schneider, Prof. S.K. Pathak

- **Talk by Walt** on Validation using Phantom and ex-vivo imaging (60 minutes) 10:00 – 11:00
- Microstructural Imaging (60 minutes) – **Sudhir (11:00 – 12:00)**
 - Basis of diffusion process in biological tissue.
 - Mathematical modeling of diffusion signal (parametric)
 - NODDI/SMT/Kurtosis Imaging
- Tea Break: 12:00 – 12:15
- **Sudhir (12:15- 13:15)**
- Imaging Protocol.
- Signal on Sphere, fiber ODF, Deconvolution of the sphere
- Tractometry (if time permits)
- **LUNCH 13:15 – 14:30**
- Clinical Talks (2 hour) (**Walt, Sudhir,)** (14:30 – 16:00)
 - On neurosurgery
 - TBI
 - Neurodegenerative diseases
 - **Tea Break (16:00 – 16:15)**
- Deep Learning Models(2 hour)
- (**Aditya, Rathish, Ranjeet) 16:15- 18:15)**
 - Deep Learning in medical Imaging
 - Physics-based Neural Network Models
 - Neurodegenerative diseases
- Demo (one hours) (**Sudhir, Durgesh)**
- **SPECIAL DINNER (VH) 7:30 PM.**