**OSSI-PET database**

Open-access database of Simulated \(^{11}\text{C}\)Raclopride Scans for the Inveon preclinical PET scanner

**What is it?**

3 actual dynamic scans

350 full simulated dynamic scans with realistic parameters = 1 control + 6 pathological groups

The OSSI-PET database is the first database of simulated pre-clinical PET scans, containing 350 simulated \(^{11}\text{C}\)Raclopride dynamic scans for rats exhibiting a high level of realism. PET imaging with \(^{11}\text{C}\)Raclopride is used to study the Dopamine system in vivo, which is involved in numerous neurological diseases such as Parkinson disease. A realistic numerical phantom of a rat was used to define the spatial radioactivity distribution in the brain and in the rest of the body. The Time Activity Curve (TAC) assigned to each organ or structure of the phantom was obtained from kinetic modelling insuring their realism and biological viability, the knowledge of the true underlying biological parameters and more importantly the possibility to control their values and variations. The main originality of this database lies on the availability of several groups of scans with controlled biological variations of different magnitudes in a specific region, allowing for instance the optimization of the data processing that maximize their statistical detection. Those data are freely available and will help the scientists in designing, assessing and validating their correction, reconstruction and data analysis methods in quasi real life situation.

**How to access the data?**

The database is hosted by Intersect and is accessible through FTP access:

What can you find in the repository?

1. **Folder actual scans**: Actual [11C]Raclopride dynamic PET scans in rat with attenuation and normalization files.

2. **Folder images**: Reconstructed images with FBP2D, 3DRP, OSEM2D (1, 2 and 3 iterations) and OPEM3D (1, 2 and 3 iterations) for the control group and the 6 pathological groups.
   - 200 reconstructed images for the control group: `emission_raclo_36fr_control_M_rN.img`
   - 25 reconstructed images for each pathological group: `emission_raclo_36fr_mXpc_M_rN.img`

3. **Folder NormAndAttenuation**: Normalization and attenuation files for the proposed rat model.
   - Normalization file: `norm_file_inveon_span3_mrd79.nrm`
   - Attenuation file: `roby_pbr_multi_att_mumapres.img_fwdprj.atn`

4. **Folder RefData**: Reference data for the proposed rat model.
   - Reference TACs: `ref_TACs.xls`
   - Emission phantom: `roby_raclopride_emission.img`
   - Attenuation phantom: `roby_raclopride_emission_ref_attenuation.img`

5. **Folder Sinograms**: Simulated scans with random, delayed, scatter and net true events saved separately.
   - 200 simulated scans for the control group: `emission_raclo_36fr_control_rN_E.scn`
   - 10 simulated scans after all corrections applied and FORE rebinning for the control group (subfolder `FORE_corr`): `emission_raclo_36fr_control_rN_fore.scn`
   - 25 simulated scans for each pathological group: `emission_raclo_36fr_mXpc_rN_E.scn`
   - 10 simulated scans after all corrections applied and FORE rebinning for each pathological group (subfolder `FORE_corr`): `emission_raclo_36fr_mXpc_rN_fore.scn`

\[ M = \text{reconstruction method (3DRP, FBP2D, OSEM2D or OSEM3D), } N = \text{number of the replicate, } X = \text{percent of BP}_{\text{ND}} \text{ decrease for a specific pathological group, } E = \text{event type.} \]

More information: