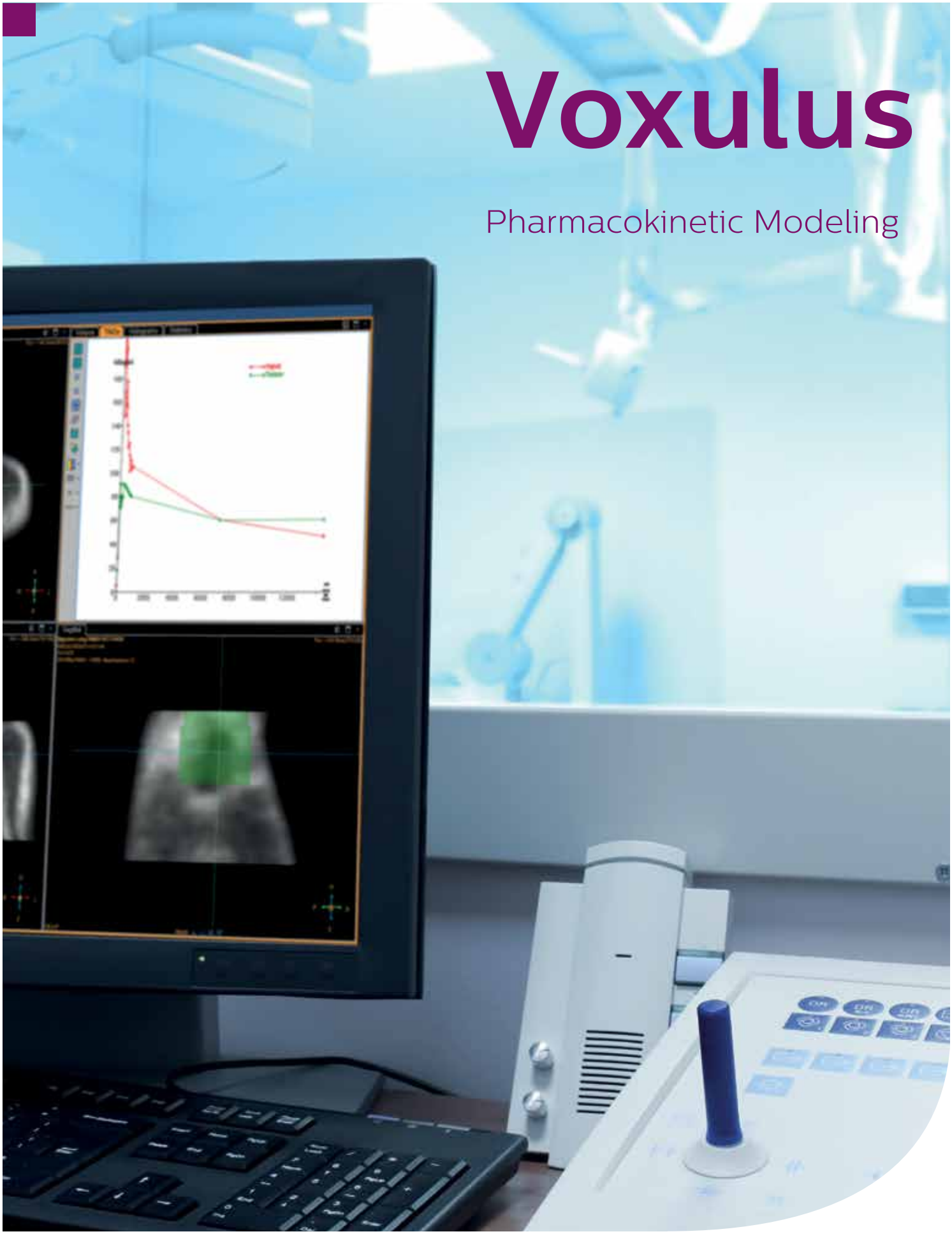
Voxulus

Pharmacokinetic Modeling



Imalytics Research Workstation

PHILIPS

Voxulus

Pharmaco-kinetic modeling

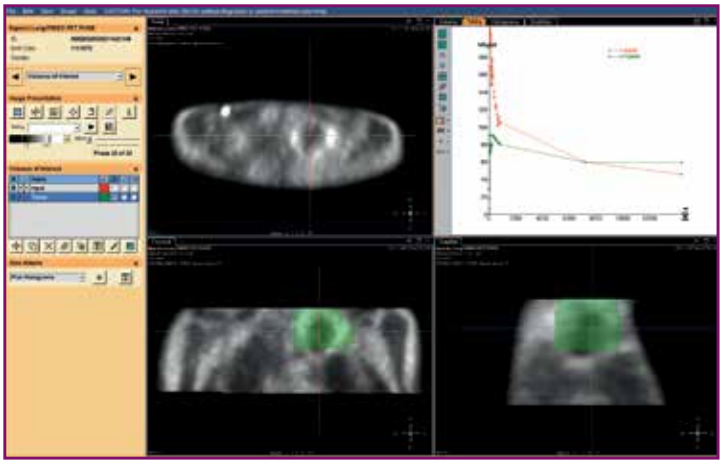
Voxulus is a pharmacokinetic modeling research software, which allows you to obtain quantitative parameters from dynamic imaging data. The available models support your research in many areas, including studies of metabolic processes, hypoxia, cell proliferation, perfusion and receptor binding studies.

Key features of Voxulus:

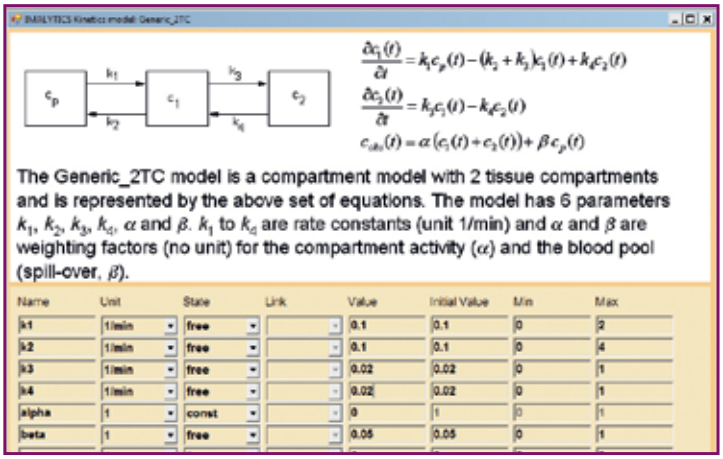
- efficient computation of parametric maps based on fully analytical mathematical solutions
- voxel-wise and regional parameter estimation
- statistical analysis of modeling results, correlation plots and histograms
- full control over model parameters setup
- flexible combination of models for input and target function
- possibility to define your own analysis protocols

Available compartment models include:

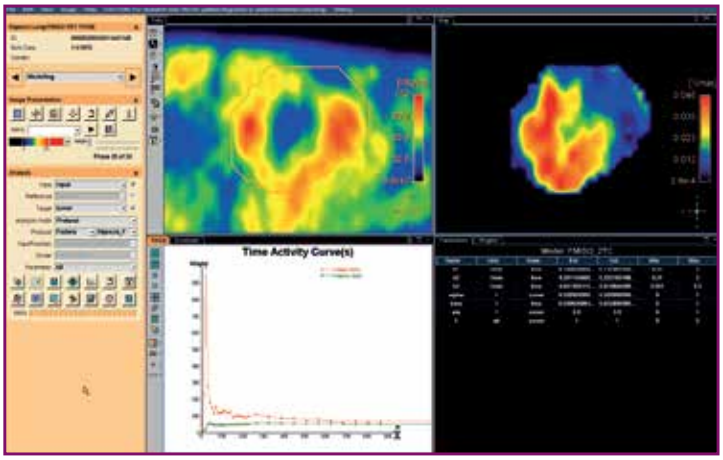
- generic 1 and 2-tissue compartment models
- blood flow models with 1 and 2-tissue compartments
- FMISO/FAZA 2 and 3-tissue compartment models
- Lammertsma and simplified Lammertsma reference tissue models
- mono-exponential ADC model



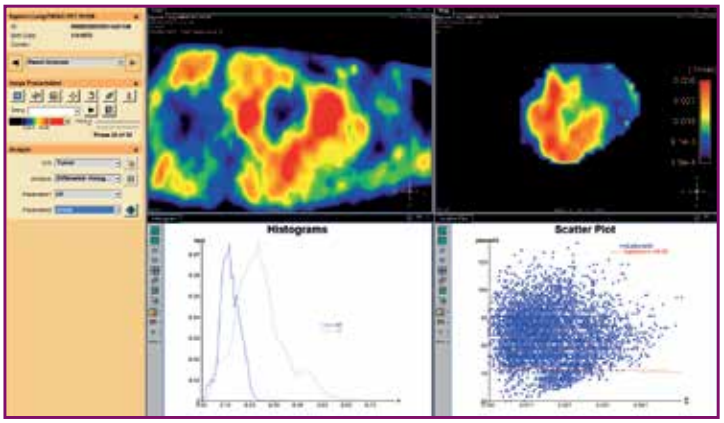
Dynamic PET data and Time-Activity-Curves for the target and input function region



Compartment model setup window



Parametric map calculated by fitting the compartment model to the data



Statistical analysis of the parameter results (scatter plot and histogram)

Publications

Image-guided PO2 probe measurements correlated with parametric images derived from 18F-fluoromisonidazole small-animal PET data in rats.
Bartlett RM, Beattie BJ, Naryanan M, Georgi JC, Chen Q, Carlin SD, Roble G, Zanzonico PB, Gonen M, O'Donoghue J, Fischer A, Humm JL.
J. Nucl. Med, Volume 53, Issue 10, October 2012, Pages 1608-1615

Pharmacokinetic analysis of hypoxia (18)F-fluoromisonidazole dynamic PET in head and neck cancer.
Wang W, Lee NY, Georgi JC, Narayanan M, Guillem J, Schöder H, Humm JL.
J. Nucl. Med, Volume 51, Issue 1, January 2010, Pages 37-45

Evaluation of a compartmental model for estimating tumor hypoxia via FMISO dynamic PET imaging.
Wang W, Georgi JC, Nehmeh SA, Narayanan M, Paulus T, Bal M, O'Donoghue J, Zanzonico PB, Schmidtlein CR, Lee NY, Humm JL.
Phys. Med. Biol, Volume 21, Issue 54, 21 May 2009, Pages 3083-3099

The quantification of dynamic FET PET imaging and correlation with the clinical outcome in patients with glioblastoma.
Thiele F, Ehmer J, Piroth MD, Eble MJ, Coenen HH, Kaiser HJ, Schaefer WM, Buell U, Boy C.
Phys. Med. Biol, Volume 54, Issue 18, 2009, Pagea 5525-5539

Evaluation of non-uniform weighting in non-linear regression for pharmacokinetic neuroreceptor modelling.
Thiele F, Buchert R.
Nucl. Med. Commun, Volume 29, Issue 2, February 2008

The simplified reference tissue model for SPECT/PET brain receptor studies. Interpretation of its parameters.
Buchert R, Thiele F.
Nuklearmedizin, Volume 47, Issue 4, 2008, Pages 167-174

Ecstasy-induced reduction of the availability of the brain serotonin transporter as revealed by [11C](+) McN5652-PET and the multi-linear reference tissue model: loss of transporters or artifact of tracer kinetic modelling?
Buchert R, Thiele F, Thomasius R, Wilke F, Petersen K, Brenner W, Mester J, Spies L, Clausen M.
J. Psychopharmacol, Volume 21, August 2007, Pages 628-634

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