Product Profile

The NeuroXM™ Brain Science Suite

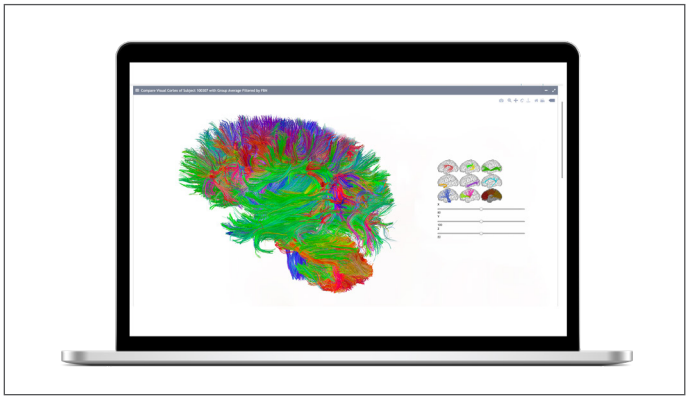
Make the most out of your brain data

Choose the NeuroXM™ Brain Science Suite for neuroscience data and processing

The NeuroXM™ Brain Science Suite is a novel and unique solution for everyone working at the frontiers of human neuroscience. With it, dealing with, e.g., multimodal neuroimaging data becomes easy and straightforward; its novel algorithms for high-resolution connectomics and cross-species transcriptomics reveal new insights into the brain as never before.

The NeuroXM™ Brain Science Suite is particularly designed for well-experienced scientists with profund know-how in connectomics and transcriptomics who plan to make significant progress in the world of neuroimaging.

The platform allows you to archive your research data and publications internally and to share them with the public wherever necessary in order to increase the number of citations and to make new methods and research results available on a broad basis.



High resolution connectome

The connectome and the transcriptome are the ultimate keys to understanding every brain function and disease. Neuroimaging produces huge data sets of brain connectivity, transmitter release and receptor densities, and many more brain-related biomarkers.

Keeping track of all brain and clinical data, existing neuroscience knowledge bases, and public data sets is practically impossible.

Exploring Neuroimaging Data with NeuroXM

The NeuroXM™ Brain Science Suite is a client server application that assists you to assess, store, harmonize and re-use all your neuroimaging data.
Interoperability, Multimodal Integration, Semantic Enrichment, AI Preparation, FAIR Principle Support and configurable Automated Processing describe the key elements of the NeuroXM™ Brain Science Suite, hosted by Biomax or behind your firewalls.

Organize, Assess and Explore Neuroimaging Data

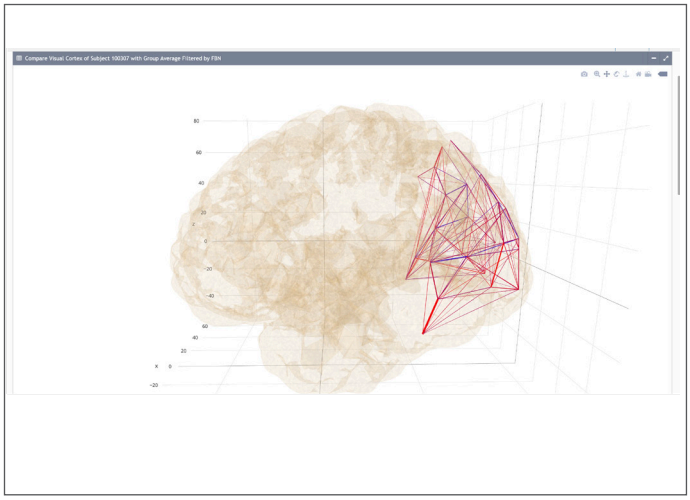
Using the NeuroXM™ Brain Science Suite enables you

- to explore and assess biomarkers from any imaging modality, e.g., MRI, fMRI, dMRI, PET, MEG, etc.,
- to study volumetric changes, alterations in blood flow or brain connectivity in your patient,
- to use high-resolution processing workflows to assess pathologic alterations in intraarea connectivity in diffusion MRI of individual subjects,
- to use sophisticated query and filter mechnisms,
- to find changes in disease-related brain networks and
- to compare patients against controls.

Multimodal Brain Image Integration

The integration of multimodal images brings unique benefits, allowing you for example

- to automatically merge volumetric information (MRI) with functional brain activation (rs-fMRI, PET) to detect sites of neurodegeneration,
- to combine structural (DTI) and functional connectivity (fMRI) to predict cognitive decline or
- to co-localize changes in receptor densities (PET) and connectivity (DTI, fMRI) to monitor effects of treatment.



Comparison visual cortex with group average

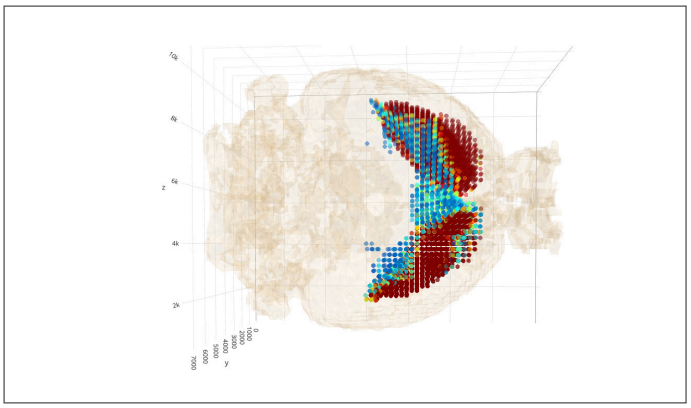
Customized Processing Workflows

> Integrate your own sophisticated processing pipelines for DTI tractography or fMRI / MEG / EEG time series correlations.

> Apply your processing pipelines directly to inhouse or public data from HCP, UK Biobank, ADNI, etc.

> Benefit from fully automated documentation of your customized workflows.

> Make your neuroscientific results sustainable by integrating processing workflows and data in the same place.



Gene expression according to the Allen Mouse Brain Atlas

The structure of the NeuroXM™ Brain Science Suite follows the FAIR data principles (Findable, Accessible, Interoperable, Re-usable) to support your sustainable research data management.

Enhanced Interoperability and Re-Usability

The systematic management of brain data within the NeuroXM™ Brain Science Suite allows the user

> to organize data in accordance to open standards, e.g. BIDS (Brain Imaging Data Structure), and

> to import data from in-house PACS or public databases, e.g. ConnectomeDB, ADNI, or UK Biobank.

Semantic Network of the Brain Science Suite

Enrich with Semantic Context

The core of the NeuroXM™ Brain Science Suite is the knowledge model – a huge semantic network that comprises all knowledge entities of the brain science domains connected by semantic relations. Data is integrated into the knowledge model by creating new instances of its semantic objects and relations to other objects.

Enriching brain imaging data with semantic context provides deeper insight and allows

> to show functional classification of brain structures,

> to enrich any biomarker with publicly or in-house available ontological metadata,

> to search genes expressed in certain brain areas to find new drug targets and

> to validate receptor-PET against gene expression from post-mortem brains.

The NeuroXM™ Brain Science Suite can grow dynamically with the field of brain science and is extendible, customable and responsive at any time.

From Mouse Brains to Humans

Following the requirements especially from the pharma industry, the NeuroXM™ Brain Science Suite integrates both, human brain data as well as model organism brain data. This allows for a range of essential analyses, as for example

> to query homologue genes,

> to visualize differential expression,

> to analyze connectivity patterns of brain areas with high expression or

> to analyze differential connectivity in mouse and humans.

Why choose the NeuroXM™ Brain Science Suite?

> The Brain Science Suite automates your processing pipelines that become easily executable by everyone through a responsive and fully customizable web interface.

> The Brain Science Suite saves your time by creating a “one stop shop” for brain imaging data and processing.

> The Brain Science Suite increases interoperability by standardizing processing pipelines across centers, increases re-usability and automatically documents all processing steps as meta-data.

> The Brain Science Suite combines cross-species transcriptomics with high resultion connectomics to support target finding and the prediction of safety in early drug development.

NeuroXM runs on supercomputers

Why choose Biomax?

> Biomax offers a large variety of neuroscientific data and processing components, which can be cost and time efficiently assembled to compelling solutions.

> Biomax provides high perfomance clusters with maximal data availability for our customers.

> Biomax is a reliable partner certified according to ISO 9001 ISO 27001.

> Biomax has been partner in more than 25 academic EU projects.

> Biomax has more than 20 years of experience with major client projects with more than 1.000 users per site.

> Biomax runs clinical data centers 24/7 and fulfills all clinically relevant data security standards.

With all our experience, Biomax supports you to gain maximal visibility, accessibility and impact of your neuroscience data, results and methods.

Get in touch with our experts for next steps consultation and your individual offer.

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