Contribution of molecular, imaging and IC technologies to developmental neuroscience

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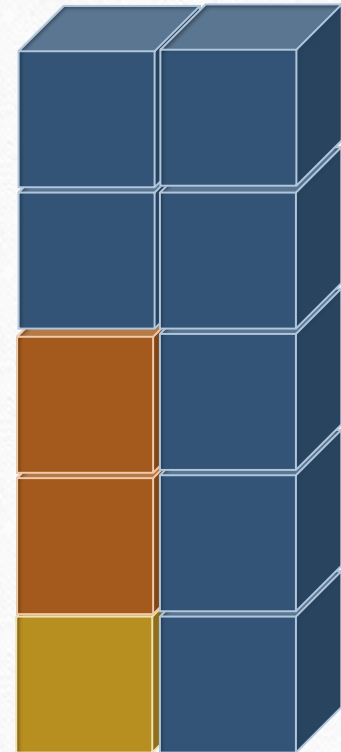# Neurodevelopmental Disorders (NDDs)

In the DSM-V the new cluster of NDDs is proposed, which includes six categories:

- Intellectual Developmental Disorders
- Communication Disorders
- Autism Spectrum Disorders
- Attention Deficit/Hyperactivity Disorder
- Learning Disorders
- Motor Disorders

SEVERE FORMS
WITH MULTIPLE DISABILITIES

+ MODERATE FORMS

+ MILD FORMS

>1,000,000 children in Italy

DIAGNOSIS

THERAPY

FROM FIRST STONE TO FIRST IMAGE

'09 TOMOGRAPHER ORDERED

'10 INFRASTRUCTURES COMPLETED

'11 MAGNET DELIVERED
7 TESLA REACHED

'12 FIRST HUMAN IMAGES

'13 OFFICIAL OPENING OF THE CENTRE

IMAGO7

IMAGO7

General Electric
Healthcare
MR950 7T
Human Research
MRI System

IRCCS Stella Maris
Calambrone
Pisa

Università
di Pisa

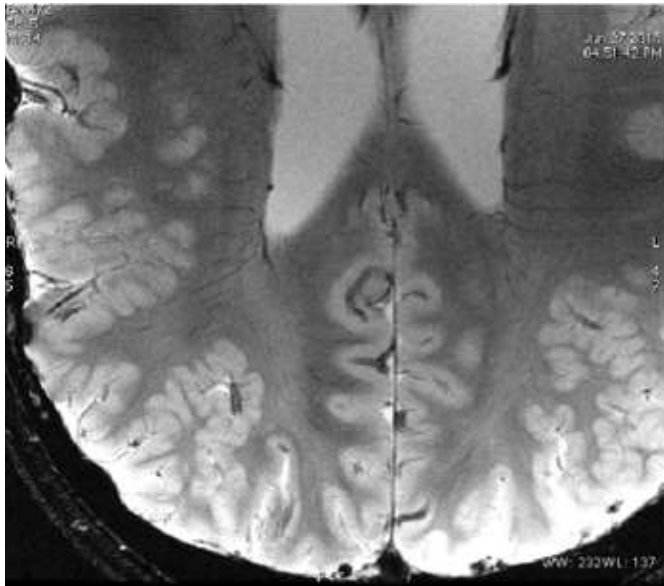Azienda Ospedaliera
Universitaria
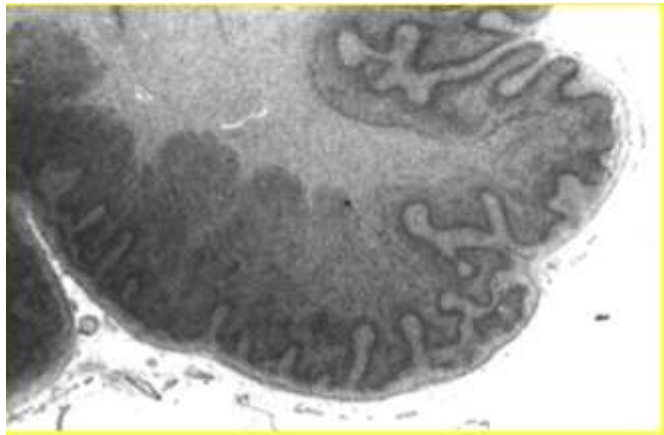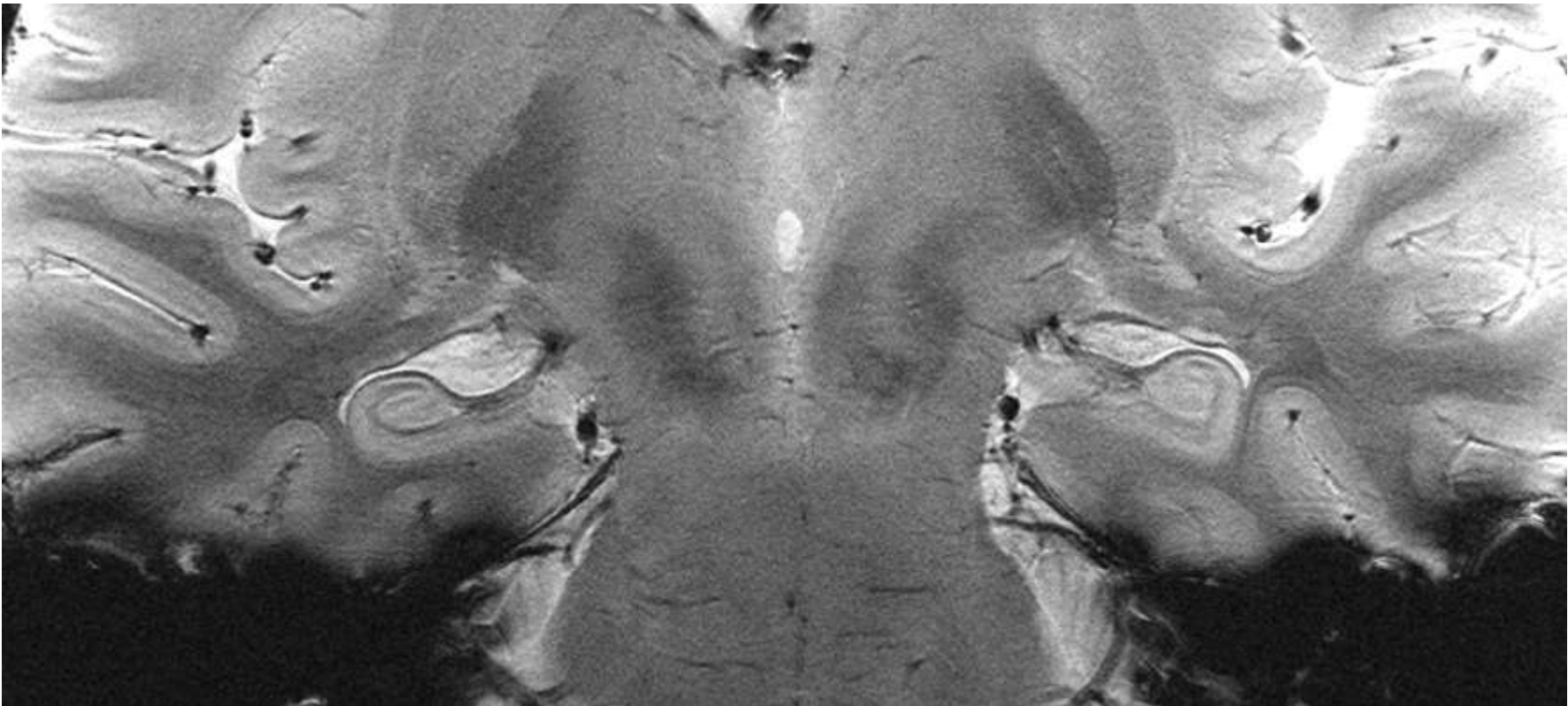di Pisa

Azienda Ospedaliera
Universitaria
Meyer Firenze

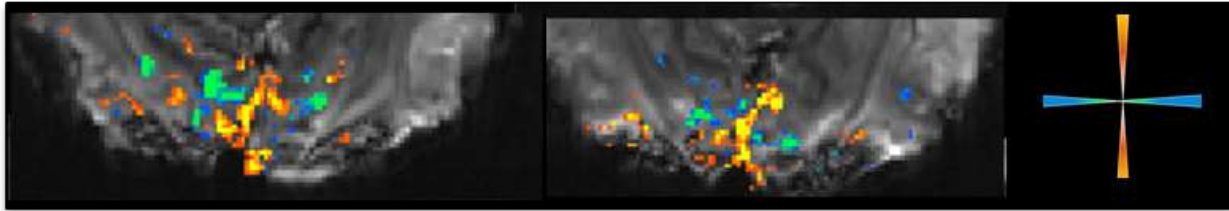IRCCS Medea
Bosisio Parini
Lecco

MEYER

EUGENIO MEDEA

Under the patronage of

FONDAZIONE PISA

Research Activity

Current research activity

Design, construction and testing of radio frequency coils for magnetic resonance systems at 7T

Design and development of pulse sequences for data acquisition and imaging techniques at 7T

Safety assessment of magnetic resonance systems at ultra-high field for future employment in developmental age

Clinical impact of ultra high-field MRI in neurodegenerative diseases diagnosis (Grant of the Italian Ministry of Health)

Evaluation of dysplastic and tumoral cortical dysembryoplastic lesions by targeted magnetic resonance imaging at ultra-high fields (Project funded by Fondazione Pisa)

Planned research topics

Development of protocols for employment of magnetic resonance at ultra-high field in pediatric age

Imaging and spectroscopy of neuromuscular pathologies

Functional mapping of the columnar architecture in human cortex

How to present a research proposal to Imago7

Researchers of other Institutes that have interest in using the resources of Imago7 are invited to present their project to the Scientific Committee for preliminary feasibility assessment: segreteriaRM7T@imago7.eu
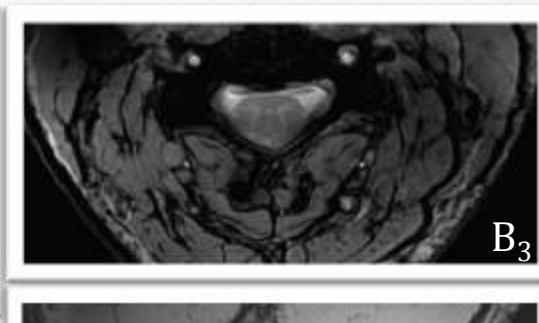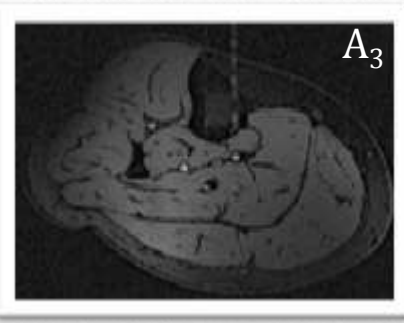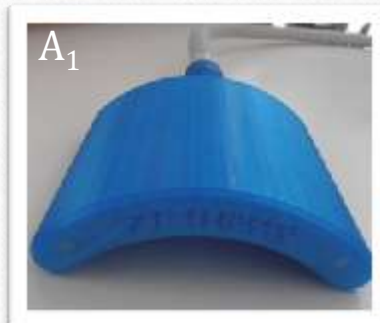
Spettroscopia
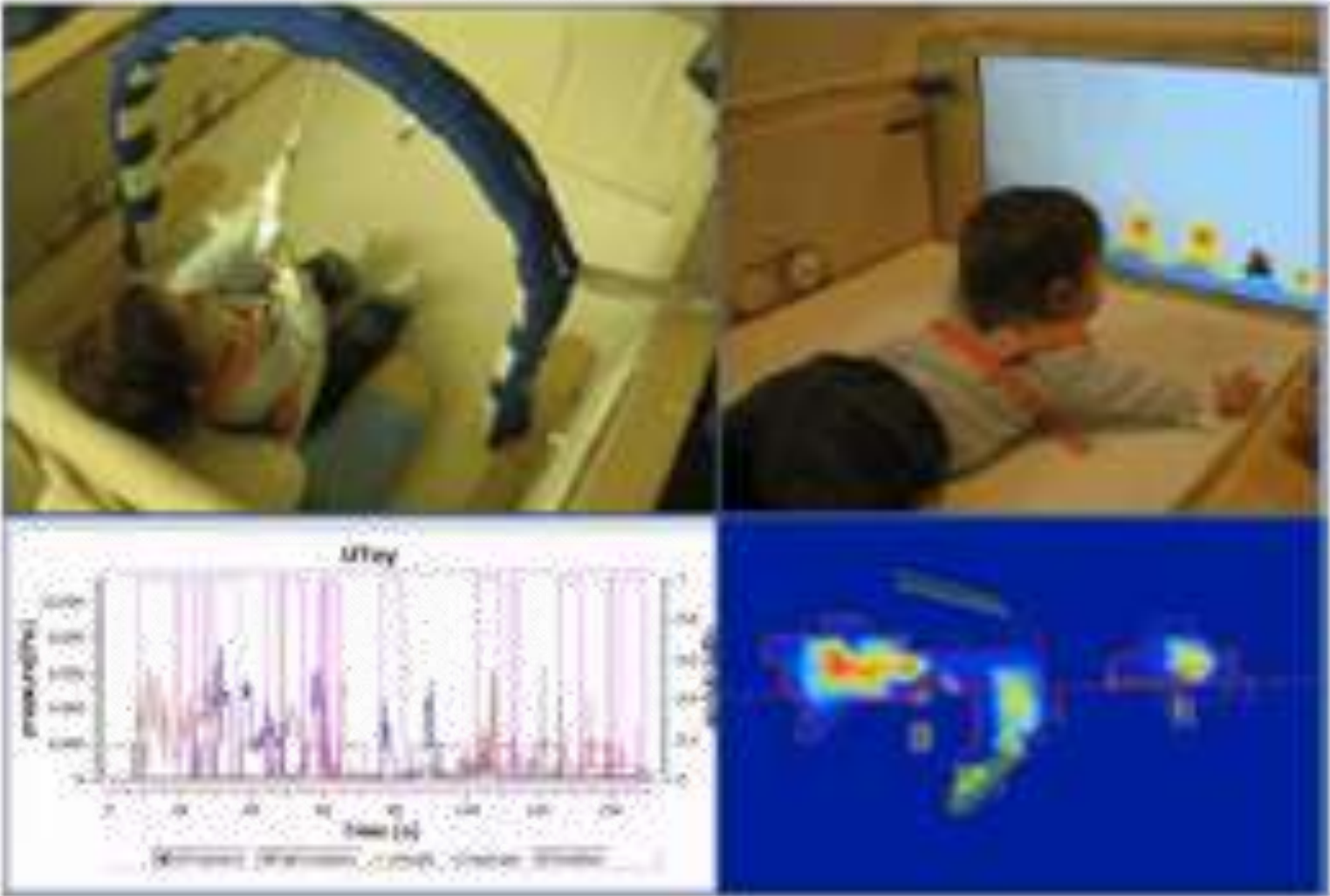
1H

31P

MiTiS: Glutammato In vivo

fMRI nella corteccia visiva

In collaboration with INFN and GE IMAGO7 Center is developing in his lab new radio-coils suitable for 7T signals reception and transmission.
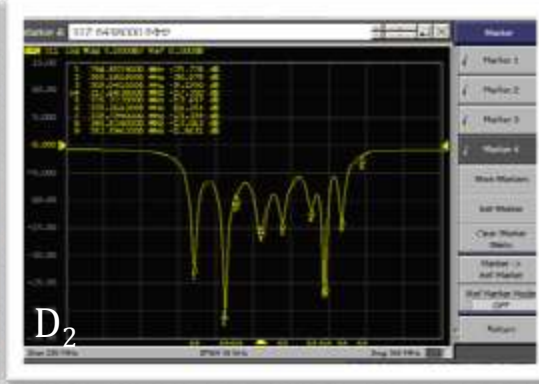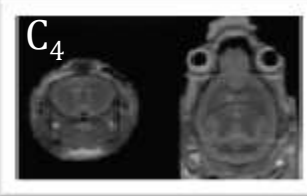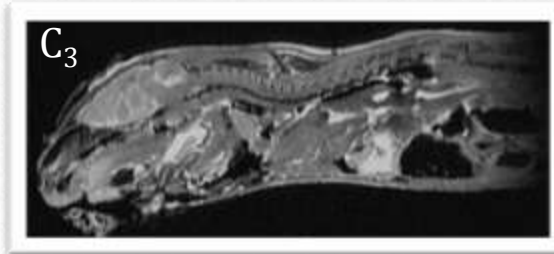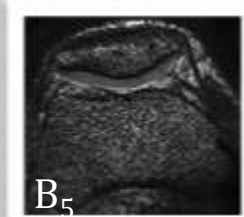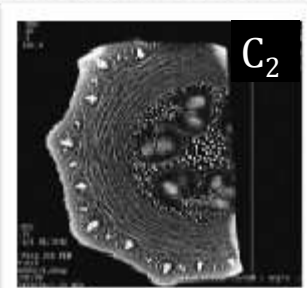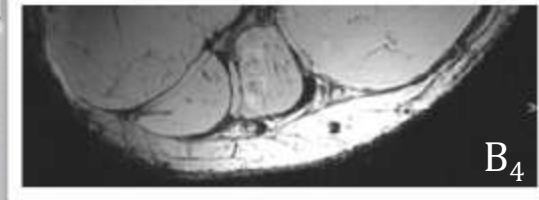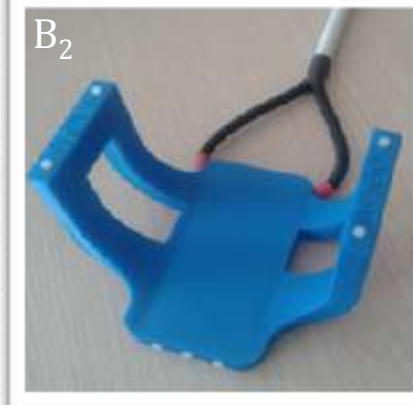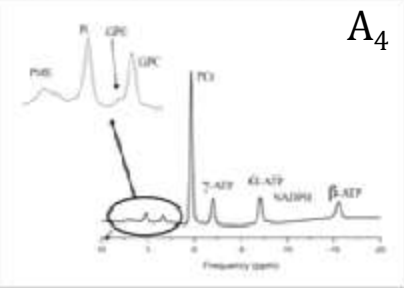
INFORMATION COMMUNICATION TECHNOLOGIES FOR **INTENSIVE HOME TREATMENT** IN INFANTS WITH AUTISM OR OTHER NDDS

INFORMATION COMMUNICATION TECHNOLOGIES FOR **INTENSIVE HOME TREATMENT** IN CHILDREN AND ADOLESCENTS WITH LEARNING DISABILITIES

INFORMATION COMMUNICATION TECHNOLOGIES FOR **INTENSIVE HOME TREATMENT** IN CHILDREN WITH CEREBRAL VISUAL IMPAIRMENT