Neurosurgical Studies of Normal Human Brain Functions

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Topics

• History
• Methods
• Training and Personnel
• Representative Programs
• Translational Research

Dr. Wilder Penfield
The Montreal Neurological Institute (MNI)

Electrical Stimulation Functional Mapping: “Basic” and “Clinical” Research
Primate Brain Evolution

Spatial-Temporal Resolution and Invasiveness of Techniques for Studying Brain Function

Log Time (sec)

Non-invasive
Invasive

Human
Common Chimpanzee

Primate Brain Evolution
Modified from Purves et al., 2004.

Primary auditory Cortex (A1)
Medial geniculate body (MGB)
Medulla
Inferior colliculus (IC)
Auditory nerve
Spiral ganglion
Dorsal (DCN)
Anteroventral (AVCN)
Posteroventral (PVCN)
Pons
Pons-midbrain junction
Midbrain
Diencephalon
Cerebrum
Cochlear nuclei (CN):
Nucleus of the lateral lemniscus (NLL)
Lateral lemniscus
Auditory radiation
Brachium of inferior colliculus
Lateral lemniscus
Dorsal, ventral, intermediate acoustic striae
Building the Research Team
Building the Research Team


Igor O. Volkov PhD

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A.A. Bogomoletz Institute of Physiology
Ukrainian Academy of Sciences
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Collapse of the Soviet Union (1991)
Iowa

A Long Tradition of Research Excellence

Thompson DF. Geography of U.S. Biomedical Publications. NEJM 340:817-818, 1999

Howard MA et al. J. Comparative Neurology 2000
