

## Web resources for neurologists and neurosurgeons

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### ABSTRACT

The medical professionals are facing major challenges to keep abreast of current and updated information with the rapidly growing scientific and clinical knowledge. The benefits of medicine have been increasingly evident providing ever wide access to a universe of online medical resources. The authors have made an attempt to compile a directory of digital resources on Neurology and Neurosurgery and allied areas which are available over web.

**KEYWORDS:** Online resources, Web databases, Neurology, Neurosurgery

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### Introduction

Internet is a treasure house of resources and mass. Yet library has an edge over web because the user can benefit from the librarian's experience to analyze the sources appropriateness and authenticity. There are various kinds of information resources available on World Wide Web, but finding the reliable website with right information is a complex process. Librarians can play a vital role in helping users to find quality information from World Wide Web (WWW).

The Information explosion has made profound impact in 21<sup>st</sup> century due to the advent of information and communication technologies (ICTs), particularly in providing an access to a universe of medical resources. Moreover, the benefit of ICT for medical professionals has become more evident with time.

Computers are connected through a world wide network for sharing of information. Tim burners Lee mentioned that "There are billions of neurons in our brains, but what are neurons? Just cells. The brain has no knowledge until connections are made between neurons. All that we know, all that we are, comes from the way our neurons are connected".<sup>1</sup>

The medical specialty concerned with study and treatment of disorders of the nervous system falls under Neurological sciences, whereas neurosurgery pertains to the discipline in medicine that focuses on the diagnosis and surgical treatment of the central, peripheral and autonomic nervous system. Advances in the basic understanding of the nervous system and therapeutics of neurologic disease have created, for the first time in human history, an ethical imperative to correctly

diagnose neurologic diseases, more so in differential diagnosis, through valid and evidence based information from the disease management and clinical guidelines available on World Wide Web.

World Wide Web is a store house of knowledge for all professionals and Neurosurgeons are not excluded from it. The quantity of information available over the web and the escalation of its use in health-care have led to a stream of specialized expertise in their own fields. Neurosurgeons can benefit from the advantages of electronic communication, the powerful mechanism for accessing neurosurgical information, and above all the enhanced professional collaboration.<sup>2</sup>

Health is probably the largest single category of information hosted by World Wide Web. Over two thirds of the online public known as Cyberchondriacs seeks information about it. Cyberchondriacs in USA and France were found to visit medical journals and academic or research institutions, closely followed by commercial health website.<sup>3</sup> The medical professionals are facing major challenges to keep abreast of current and updated information with the rapidly growing scientific and clinical knowledge. Fortunately, there are various tools and resources available to gain adequate knowledge for accessing this information. The popularity of the Internet has made it an easier and faster way to find information.

### Need for the study

Even though there are innumerable online digital information resources available in the areas of Neurology and Neurosurgery across the world, a majority of the users are not aware of these resources. There-

fore it is necessary to create awareness about some potential ones among the professionals. Therefore, an attempt has been made in this paper to compile a directory of digital resources for easy references on Neurology and Neurosurgery and its allied areas, which are available over net.

### Web resources on Neurology and Neurosurgery and its allied subjects

An editorial in the British Medical journal describes futures of medical publishing that depend heavily on electronic communication.<sup>4</sup> Some of the important web resources are listed below:

#### Neurology portals

*American Academy of Neurology*  
URL-www.aan.com

The American Academy of Neurology represents neurologists around the world. It presents clinical practice guidelines as well as discussions of neurologic issues tailored specifically for neurologists. This site provides valuable information on neurological conditions, including stroke, to both medical professionals. It also includes a long list of web sites and academic neurology departments in the United States.<sup>5</sup>

*Brain Matters*  
URL-www.thebrainmatters.org

Brain Matters has been created to bring awareness to the public about brain tumors. Heidi Gottlieb, the Founder and Director of Brain Matters was diagnosed with a cancerous brain tumor 20 years ago. Since then, she had two brain surgeries and two rounds of radiation. Brain Matters generates funds for brain tumor research at Mass General Hospital's Brain Tumor Research Center, as well as to other

medical research for brain tumors for its early detection, with the hope that one day there will be a higher survivor rate and a lower mortality rate.

#### *Neuro guide*

URL-[www.neuroguide.com](http://www.neuroguide.com)

Neuroguide.com was first published in 1994. The original site contained an index of Neuroscience resources available on the Internet including Neurobiology, Neurology, Neurosurgery, Psychiatry, Psychology, Cognitive science sites and information on human neurological diseases.

#### *World Federation of Neurology*

URL-[www.wfneurology.org](http://www.wfneurology.org)

This site promotes worldwide practices of Neurology in education and research and is affiliated with World Health Organization and National Stroke Association. The site fosters quality Neurology and brain health worldwide. The registered office is in England. The objective of this Federation is to improve health conditions worldwide by promoting education and research in Neurology by adopting preventive measures and treatment of Disorders of the Nervous system.<sup>6</sup>

#### *Neurology database*

URL-[www.neurology.co.in](http://www.neurology.co.in)

This site gives comprehensive resource for Neurologist having links to various topics related to Neurology databases, journals, books, glossary web directory, diseases and free books, forums, Neurology organizations and associations.

#### *Neuroland: Clinical Neurology Information for Professionals*

URL-[www.neuroland.com](http://www.neuroland.com)

This site is maintained and supported by Charles Tuen, MD, through the Methodist Medical Center in Dallas, Texas. It provides links to roughly 20 Neurology websites for physicians and health care professionals. In addition to Neuro images, it also provides links to online medical books and journals, practical hints, medication information, and practice guidelines.

#### *Dana Brain Web*

URL-[www.dana.org](http://www.dana.org)

This site provides information links to validated sites about brain diseases and disorders. It includes outside resources reviewed by scientific advisors, as well as articles of Dana Publications. Detailed Information on more than 25 common brain diseases and disorders with some

of the Internet's best general neuroscience and health resources can be accessed by the links of sites listed in Dana Brain Web. They also offer descriptions of conditions such as FAQs (frequently asked questions), background for talking to physicians, treatment options, support information for families and caregivers, organization contacts. Brain Web and its links are suitable for lay readers, including students and educators, as well as people with brain disorders, their families, and caregivers.

#### *Trip database*

URL-[www.tripdatabase.com](http://www.tripdatabase.com)

The TRIP Database is a user friendly clinical search tool designed for health professionals and Neurologists to identify the highest quality clinical evidence for clinical practices. It includes coverage of the Cochrane Library, which has review groups dedicated to dementia and cognitive impairment, epilepsy, movement disorders, multiple sclerosis, neuromuscular diseases, and stroke.

#### *Cochrane neurological field*

URL-<http://neuronet.cochrane.org>

The Cochrane Neurological Field is an entity of the Cochrane Collaboration, an International nonprofit organization assembling more than 10,000 people around the world who work to promote evidence-based approaches of medicine.

The Cochrane Neurological Field works with Neurological Cochrane Review Group to improve their productivity and communicate the results of their research to a worldwide Neurological community. It facilitates the production of systematic reviews in Neurology and Neurosurgery by promoting the work and serves as liaison for Neurological Cochrane Review Group. It also provides a platform to access Cochrane Reviews and disseminate reviews to a worldwide Neurological audience. Hence, it provides an evidence-based approach to healthcare in the field of neurology.

#### *Medscape – Neurology News*

URL-[www.medscape.com](http://www.medscape.com)

The site contains news on diagnosis and treatment of various neurological diseases, such as Alzheimer's disease, headache, pain, multiple sclerosis, Parkinson disease, seizures, stroke/cerebrovascular diseases. It provides various online books, manuals and magazines of Neurology along with pages of other specialties

#### *The Society for Neuroscience Database Gateway*

URL-[www.sfn.org](http://www.sfn.org)

The Neuroscience Database Gateway is a resource of Society for Neuroscience members. Its aim is to promote awareness and facilitate access to relevant Neuroscience databases. It also offer links to five main types of database such as All Neuroscience databases, Databases of Experimental data, Databases for Knowledge bases, Software tools for Neuroscience, and Bioinformatics resources providers of research material.

#### *MDLinx Neurology*

URL-[www.mdlinx.com/neurology/](http://www.mdlinx.com/neurology/)

MDLinx Neurology helps physicians and healthcare professionals to stay up to date with the latest Neurology news articles and research, neurology jobs, conferences, and resources. It connects healthcare professionals and patients to tomorrow's medical research article knowledge and provides the pharmaceutical and healthcare industries with highly targeted interactive marketing, education, content and medical research solutions.

#### *Brain Facts*

URL-[www.brainfacts.org](http://www.brainfacts.org)

Brain Facts is a recent authoritative information source for brain and nervous system. The content of the site is reviewed by Society for Neuroscience members or peer reviewers approved by Brain Facts organization. The site provides causes, symptoms, and outcomes of brain disorders information for public awareness.

#### *International Brain Research Organization*

URL-[www.ibro.info](http://www.ibro.info)

The International Brain Research Organization (IBRO) is an international organization to promote neuroscience and communication between brain researchers around the world with special emphasis on assisting young researchers in the developing world. The IBRO sponsors young researchers to attend international Symposia and workshops on competitive basis. Also, IBRO offers Post-Doctoral Fellowships and travel grants to students from less-developed countries. IBRO is regulated by its own Governing Council made up of more than 80 neuroscience organizations around the world. The IBRO represents the 75,000 neuroscientists around the world.

## Patient Information portals

### *Neurology channel*

URL-[www.healthcommunities.com/health-topics/brain-nerves.com](http://www.healthcommunities.com/health-topics/brain-nerves.com)

This site offers health news, information on Neurological conditions, patient forums, and a directory containing list of health care providers.

### *Patients like me*

URL-[www.patientslikeme.com](http://www.patientslikeme.com)

"A patient like me" isn't solely dedicated to Neurology. Using this tool, patients can chart their symptoms over time, rate their drugs and treatments and can track their progress against other patients.

### *National Institute of Neurological Disorders and Stroke*

URL-[www.ninds.nih.gov](http://www.ninds.nih.gov)

The official website of the National Institute of Neurological Disorders and Stroke of USA is a clearing house for information on Neurological disorders. It provides explanations about diseases, clinical trials and links to patient's organizations.

### *Headway*

URL-[www.headway.org.uk](http://www.headway.org.uk)

This site promotes understanding of all aspects of brain injury. It provides information, support and services to people and their families with brain injury.

### *Brain and spine foundation*

URL-[www.bbsf.org.uk](http://www.bbsf.org.uk)

The foundation is helping the people who are affected by brain and spine. Medical and educational professionals are dealing with the effects of brain and spine conditions across the UK.

### *American Association of Neurological Surgeons*

URL-[www.aans.org](http://www.aans.org)

This is a database of the American Association of Neurological Surgeons and Congress of Neurological Surgeons. It provides neurosurgical information for health care professionals and the public. It has an image bank section which has excellent downloadable radiographs and pictographic images.

### *Neurosurgery International Doctor to doctor*

URL-[www.nsinternational.org](http://www.nsinternational.org)

This is a nonprofit organization to improve Neurological surgery and Health care in developing countries. It also promotes education and training for young Neurosurgeons

through educational grants, exchange programmes and consultations network.

### *National Headache Foundation*

URL-[www.headaches.org](http://www.headaches.org)

Headache is a major Neurological problem for which patient seek diagnosis and treatment. This official website of National Headache Foundation acts as a resource for health professionals and patients alike.

### *Brain Talk communities*

URL-<http://www.braintalkcommunities.org>

The Brain Talk Communities are online patient support groups for people living with Neurological conditions. These online communities are best placed to provide compassion and support from other patients and caregivers around the world. The Brain Talk Communities are provided as free public service by the Department of Neurology at Massachusetts General Hospital and its services are open to everyone.

## Neuroradiology Portals

### *Harvard whole brain Atlas:*

URL-<http://www.med.harvard.edu/AANLIB/home.html>

It is an educational tool for Neuroanatomical and Neuropathology features, whole brain atlas and gives detailed images, magnetic resonance images and single photon emission computed tomography of the normal and pathological brain using various imaging techniques.<sup>5</sup> Both images and videos may be viewed from this site.

### *The Centre for Neuro skills*

URL- <http://www.neuroskills.com/brain-injury/>

This site has a collection of high resolution digital animations demonstrating various forms of brain injuries, brain function, etc.

### *Brain connections*

URL-[www.brainconnections.com](http://www.brainconnections.com)

An attractive and informative site, it is aimed mainly for consumers and contains many well done illustrations and animations demonstrating the anatomy of the brain as well as the visual and auditory systems.

### *Brainmaps*

URL-[www.brainmaps.org](http://www.brainmaps.org)

An online series of Brain Atlases of several species integrated with a high-speed database for retrieving data about

brain structure and function over the internet.

### *The Human Brain*

URL-<http://www.thehumanbrain.info>

An online Human Brain Atlas contains links which portrays the distribution patterns of Neurotransmitters and Neuropeptides with complete bibliographic references for research and source from which this information was obtained.

### *Whole brain Atlas*

URL-<http://www.med.harvard.edu:80/AANLIB/home.html>

This ambitious research and educational site is a catalog of medical images of actual human brains models that are normal and healthy specimens compared to diseased, injured, and disordered tissue. This is done by examining more than 100 different structures in the brain, and their role in normal brain function and anatomy.

### *Digital Anatomist Interactive Brains Atlas Project*

URL-<http://www9.biostr.washington.edu/da.html>

This site gives the 2-D and 3-D views of the brain from cadaver sections, MRI scans, and computer reconstructions. This is a fully digital brain atlas that uses colorized digitized images to highlight important aspects of brain anatomy and their underlying anatomic pathways.

### *Internet Stroke Center*

URL-<http://www.strokecenter.org/radiology/>

A good source of Neuroradiology images is the Internet Stroke Center-Neurology Image Library, maintained by the Washington University School of Medicine. Images on this site are copyrighted; however, they can be used for educational purposes upon obtaining permissions from the Center.

### *Synapse Web*

URL-<http://synapses.clm.utexas.edu/index.asp>

An excellent source of ultrastructural (electronic microscopic) images of axons, dendrites, and neurons is Synapse Web, created by Principal investigator Kristen M. Harris, PhD, at the University of Texas. The site includes elegant reconstructions of axonal and dendritic trees. It receives funding jointly by the National Institute of Mental Health and the National Institute of Drug Abuse.

**Neurophysiology portals***Clinical Neurophysiology*

URL-[www.clinicalneurophysiology.org.uk](http://www.clinicalneurophysiology.org.uk)

It is a portal for Clinical Neurophysiology on the web, particularly through the directory. There are useful lists, such as Diary of events of interests to Neurophysiologists that covers more than one society. This web site describes personal view of clinical Neurophysiology from British perspective. Although, the science of medicine is universal but British practice of medicine differs from much of the world because of the predominance of the National Health Service in this country. Clinical Neurophysiology in Britain is practiced as a specialty in its own right, which is another difference from most other countries.

*Clinical Neurophysiology on the Internet*

URL-[www.neurophys.com](http://www.neurophys.com)

It is a directory of basic and clinical neurophysiology techniques, neuropsychology techniques, intraoperative monitoring and some internet resources.

*Tele EMG*

URL-[www.teleemg.com](http://www.teleemg.com)

This site is an EMG and Nerve Conductions Educational site that strives to increase awareness and improve the understanding of medical tests used in the evaluation of nerve and muscle diseases.

*British Society for Clinical Neurophysiology*

URL-[www.bscn.org.uk](http://www.bscn.org.uk)

The British Society for Clinical Neurophysiology (BSCN) is keen to encourage interested scientists, consultants and medical trainees, and Clinical Physiologists from all backgrounds. They can also share their views and help to develop the Specialty.

**Neuropsychiatry***Neuropsychology Central*

URL-[www.neuropsychologycentral.com](http://www.neuropsychologycentral.com)

This site is devoted exclusively to the subject of Human Neuropsychology. The main objectives of this site are to describe the importance of neuropsychology as a science of brain and behavior, to increase knowledge and act as a resource for the professional and laypersons.

*International Neuropsychological Society*

URL-[www.the-ins.org](http://www.the-ins.org)

This site belongs to the International Neuropsychological Society, which contribute

to the understanding of brain-behaviour relationships throughout the lifespan. The society's emphasis is on science, education, and the applications of scientific knowledge.

*National Academy of Neuropsychology*

URL-[www.nanonline.org](http://www.nanonline.org)

The academy is a non-profit professional membership association for experts in the assessment and treatment of brain injuries and disorders. The members of the academy are at the forefront of cutting-edge research and rehabilitation in the field of brain behavior relationships.

**Neuro-Ophthalmology***The Neuro-Ophthalmology Virtual Education Library*

URL-<http://noveel.utah.edu>

This site is open access repository of digital materials as images, video, lectures, articles and animations to be used for educational and research purposes by health care professionals, educators, patients, and students.

*European Neuro-Ophthalmological Society*

URL-[www.eunosweb.org](http://www.eunosweb.org)

This is the major society representing and promoting clinical Neuro-ophthalmology in Europe. The web site gives Neuro-ophthalmological case reports and sets of teaching slides from speakers of past meetings, etc.

**Pediatric Neurology***The Child Neurology Resource of UK*

URL-[www.child-neuro.org.uk](http://www.child-neuro.org.uk)

This site includes a lot of information on Pediatric-Neuro like articles, references, tools, continuing education for medical professionals, and healthcare professionals. Also, it is a gateway to news, education, information and discussion about child neurology.

*Child Neurology*

URL-[www.waisman.wisc.edu/child-neuro](http://www.waisman.wisc.edu/child-neuro)

This portal is to coordinate the available internet resources in child Neurology, both for professionals and patients and pediatric neurologists.

**Listservs**

The Listservs facilitates dissemination of information or discussion about their issues to a group of people with similar interests with in the 'list'.

*Neurolist*

URL-<http://www.neurolist.com/>

Through this Neurology Discussion Lists site one can join the Neurologist mailing list (NEURO), or Neuropsychology mailing list (NPSYCH), or ALS patient discussion list is open to anyone with an interest in Amyotrophic Lateral Sclerosis, or join to presentations on MS if anyone interested in Multiple Sclerosis, or Join to N-PAT for Neurological Diseases or join in EEGT if you interest in Electro diagnostic technology.

*Child Neuro listserv*

URL-<http://www-personal.umich.edu/~leber/c-n/e-mailUM.html>

This mail list is an international discussion group which deals with clinical and research topics in Child Neurology. Topics of discussion have included diagnostic and management issues, sources of diagnostic studies and hard-to-come-by medications, and requests for subjects for research studies and patients for case reports. The list is restricted to pediatric neurologists, pediatricians, adult neurologists, and neurosurgeons.

*Discussion lists in Neurosciences and Mental Health*

URL-[www.cerebromente.org.br/lists\\_i.htm](http://www.cerebromente.org.br/lists_i.htm)

This site gives the lists of general discussion in Neurosciences, and Mental Diseases. Through the listservs one can join in any of the interested groups to share or disseminate information or discuss various scientific issues

*HISTNEUR-L*

URL-<http://www.bri.ucla.edu/nha/histneur.htm>

The HISTNEUR-L is an Internet forum for exchanging information on any aspect of the History of Neuroscience. It includes announcements, inquiries and discussion on access to historical sources and their use and interpretation. The listserv is maintained for the benefit of the International Society for the History of the Neurosciences (ISHN) but is open to all.

*Neuroscience at NIH*

URL-<http://neuroscience.nih.gov/email.asp>

The above group announces the seminars, lab meetings, journal clubs, special interest group speakers, and off campus events that are of interest to the NIH Neuroscience Community.



**Neurosurgic**

URL-<http://www.neurosurgic.com/>

Neurosurgic is a professional networking site for the neurosurgical community. It is a meeting place for neurosurgeons of all levels and also all guests can browse the site as a registered member. The registration is easy and free.

**RSS /XML Feeds from Neurology and Neurosurgery Journals**

RSS stands for Really Simple Syndication and is method to subscribe web pages to obtain periodic updates. With the updated content in the website, the user can receive those updates in an RSS reader. The following are some journals which are allowing subscription for RSS feeds.

**Archives of Neurology**

URL-<http://archneur.jamanetwork.com/journal.aspx>

It provides practising physicians with access to the latest information from leading contents of neurological research.

**BMC Neurology**

URL-<http://www.biomedcentral.com/bmcneurol>

It publishes original research articles in all aspects of the prevention, diagnosis and management of neurological disorders as well as related molecular genetics pathophysiology and epidemiology etc.

**Brain**

URL-<http://brain.oxfordjournals.org>

It publishes leading studies in neurological science of journal articles.

**Cognitive and behavioural neurology**

URL-<http://journals.lww.com/cogbehavneurol/pages/default.aspx>

It provides a focused forum for the discussion of scientific approaches to the neurobiology of abnormal behaviour.

**Current Opinion in Neurology**

URL-<http://www.co-neurology.com/pt/re/conneuro/toccurrentrss.xml>

It covers Neuro ophthalmology and Neuro otology, cerebrovascular diseases developmental disorders, seizure disorders demyelinating diseases, headache and degenerative diseases.

**Current Psychiatry**

URL-<http://www.currentpsychiatry.com/rssNeuroNews.asp>

This is a platform for searching Neurology news and insights on neuroscience research findings and their potential implications for psychiatry.

**Journal of Neuropathology and Experimental Neurology**

URL-[http://journals.lww.com/jneuropath/\\_layouts/OAKS.Journals](http://journals.lww.com/jneuropath/_layouts/OAKS.Journals)

It publishes articles on Neuro pathology and experimental neurosciences, book reviews, letters and association news, relevant to Neuro Pathologists, Neurologists, Neurosurgeons pathologists and psychiatrists and basic neuroscientists.

**Journal of Neurophysiology**

URL-<http://journals.lww.com/clinicalneurophys>

It covers key papers in electro encephalography and evoked potentials, clinical neurology, neurosurgery, psychiatry and experimental research on central nervous system

**Neurology**

URL-<http://www.neurology.org/>

It exchanges latest research among physicians concerned with diseases and conditions of the nervous system. The journal's basic purpose is to advance the field by presenting basic and clinical research with emphasis on knowledge that will influence the way the neurology is practised.

**Neurosurgery**

URL-<http://www.neurosurgery-online.com>

It quarterly covers developments in the diagnosis, management and surgical treatment of neurological disorders. This includes in depth reviews of new surgical techniques emerging areas of surgical applications and advances in equipment and instrumentation.

**Techniques in Neurosurgery**

URL-<http://www.techs-neurosurgery.com>

It enables neurosurgeons to develop their practice skills, updating the latest neurosurgical techniques and clinical procedures and receive tips from leading neurosurgeons.

**Journal of Neurology, Neurosurgery and Psychiatry**

URL-<http://jnnp.bmjournals.com/rss/current.xml>

**Wiki:**

Wiki allows easy creation and editing of any number of interlinked pages via a web browser. The following are few wiki associated URLs in Neurology and allied areas.

- 1 <http://www.thefullwiki.org/Neuroscience>
- 2 [http://askdrwiki.com/mediawiki/index.php?title=Physician\\_Medical\\_Wiki](http://askdrwiki.com/mediawiki/index.php?title=Physician_Medical_Wiki)
- 3 [http://top-topics.thefullwiki.org/british\\_neurologists](http://top-topics.thefullwiki.org/british_neurologists)
- 4 Neurowiki ([http://wiki.cns.org/wiki/index.php/Main\\_Page](http://wiki.cns.org/wiki/index.php/Main_Page))
- 5 <http://phychology.wikia.com/wiki/Neuroscience>
- 6 [www.simulconsult.com](http://www.simulconsult.com)

**Blogs:**

A blog is a specific type of website where the webmaster regularly posts content and where user reacts through comments on a post. The following are few blogs relating to Neurology and allied areas. Through this the users can enhance their knowledge in the subject areas with the respective blogs with their URLs.

- 1 The healthcare blog (<http://thehealthcareblog.com/>)
- 2 The Dana Foundation Blog (<http://danapress.typepad.com/>)
- 3 The Neuro network (<http://theneuronetwork.com/>)
- 4 On the Brain (<http://merzenich.posit-science.com/>)
- 5 SC Lin's Neuroscience blog (<http://forebrain.blogspot.com/>)
- 6 Digital Neurosurgeon (<http://blog.digitalneurosurgeon.com/>)

**Some other useful resources:**

- 1 E-medicine (<http://emedicine.medscape.com/>)
- 2 Neurology Medlink ([www.medlink.com](http://www.medlink.com))

**Some of the constraints to access web resources**

- Lack of awareness about Information Technology.
- Lack of awareness about web resources on Neurology and its allied areas.
- Lack of networking facilities.
- Lack of infrastructure facilities.
- Lack of in-service training programmes on Information Communication Technologies.<sup>7</sup>

**Conclusion**

World Wide Web represents a new revolution in the realm of human communication and in the extension of the powers of our nervous system by means of technology. In the field of Medical research, neuroscientists are increasingly making use of national and international cooperation without the need to leave their desks and laboratories. The global

and all-pervasive instant electronic interaction of the next generations will radically change methods of neuroscience communication.

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