

Editorial

## Welcome to the Journal of Neuroinflammation!

Robert E Mrak\*<sup>1</sup> and W Sue T Griffin<sup>2</sup>

Address: <sup>1</sup>Professor of Pathology, University of Arkansas for Medical Sciences, Little Rock, Arkansas, USA and <sup>2</sup>Professor of Geriatrics, University of Arkansas for Medical Sciences, Little Rock, Arkansas, USA

Email: Robert E Mrak\* - mrakroberte@uams.edu; W Sue T Griffin - griffinsuet@uams.edu

\* Corresponding author

Published: 20 April 2004

Received: 30 March 2004

*Journal of Neuroinflammation* 2004, 1:1

Accepted: 20 April 2004

This article is available from: <http://www.jneuroinflammation.com/content/1/1/1>

© 2004 Mrak and Griffin; licensee BioMed Central Ltd. This is an Open Access article: verbatim copying and redistribution of this article are permitted in all media for any purpose, provided this notice is preserved along with the article's original URL.

### Abstract

Welcome to the Journal of Neuroinflammation, an open-access, peer-reviewed, online journal that focuses on innate immunological responses of the central nervous system, involving microglia, astrocytes, cytokines, chemokines, and related molecular processes. 'Neuroinflammation' is an encapsulation of the idea that microglial and astrocytic responses and actions in the central nervous system have a fundamentally inflammation-like character, and that these responses are central to the pathogenesis and progression of a wide variety of neurological disorders. This concept has its roots in the discoveries of inflammatory cytokines and proteins in the plaques of Alzheimer disease, and these ideas have been extended to other neurodegenerative diseases, to ischemic/toxic diseases, to tumor biology and even to normal brain development. The *Journal of Neuroinflammation*, published by BioMed Central, will bring together work focusing on microglia, astrocytes, cytokines, chemokines, and related molecular processes in the central nervous system. All articles published in the *Journal of Neuroinflammation* will be immediately listed in PubMed, and access to published articles will be universal and free through the internet.

### Introduction

There was a time, not too long ago, when chronic diseases such as Alzheimer's disease were thought of entirely in terms of neuronal toxicity, neuronal dysfunction, and neuronal disappearance. Any associated glial responses were dismissed as "reactive gliosis", not worthy of further serious attention. How times have changed! The identification of potent immunomodulatory cytokines, such as interleukin-1, and inflammatory proteins, such as complement, in the plaques of Alzheimer's disease has revolutionized our thinking about this and other chronic "neurodegenerative" diseases. Microglia and astrocytes have come to be recognized as active participants in these diseases, responding to neuronal insults in a decidedly immunological fashion. And - as is the case in peripheral inflammatory diseases where lack of resolution and the resulting chronic inflammation can promote rather than

resolve injury, and create entirely new diseases in the process - chronic, sustained microglial and astrocytic responses in the brain promote rather than resolve injury, and create disease in their misdirected efforts. This new understanding of innate immune responses in the brain and their potential for promoting chronic disease has led directly to a new concept in neurobiology: neuroinflammation.

### What is neuroinflammation?

'Neuroinflammation' encapsulates the idea that microglial and astrocytic responses and actions in the central nervous system have a fundamentally inflammation-like character, and that these responses are central to the pathogenesis and progression of a wide variety of neurological disorders. This idea originated in the field of Alzheimer's disease [1,2], where it has revolutionized our

understanding of this disease [3]. These ideas have been extended to other neurodegenerative diseases [4-6], to ischemic/toxic diseases [7,8], to tumor biology [9] and even to normal brain development. Neuroinflammation incorporates a wide spectrum of complex cellular responses that include activation of microglia and astrocytes and elaboration of cytokines and chemokines, complement proteins, acute phase proteins, oxidative injury, and related molecular processes. These events may have detrimental effects on neuronal function, leading to neuronal injury with, consequently, further glial activation and ultimately neurodegeneration.

Neuroinflammation is a new and rapidly expanding field that has revolutionized our understanding of chronic neurological diseases. This field encompasses research ranging from population studies to signal transduction pathways, and investigators with backgrounds in fields as diverse as pathology, biochemistry, molecular biology, genetics, clinical medicine, and epidemiology. Important contributions to this field have come from work with populations, with patients, with postmortem tissues, with animal models, and with in vitro systems.

### The Journal of Neuroinflammation

The new and rapidly expanding field of neuroinflammation deserves a journal of its own, to bring together work focusing on this new area. The *Journal of Neuroinflammation* will provide this, together with the instant convenience of online publishing and the universal availability of open access. Edited by Robert E. Mrazek and Sue T. Griffin, *Journal of Neuroinflammation* is supported by an international Editorial Board. The *Journal of Neuroinflammation* will publish original research articles (as full-length or short reports) and comprehensive, authoritative reviews. Commentaries, hypothesis papers, and occasional relevant case reports will also be considered.

All published articles will be listed in PubMed immediately upon acceptance (after peer review). Submitted manuscripts will be assigned to members of the Editorial Board for review, or to alternative or additional consultants expert in the topic of the manuscript, as deemed appropriate by the Editors-in-Chief. Peer reviewers' comments will be made available anonymously to authors. The Editors-in-Chief will provide instructions for those manuscripts requiring revision for final consideration. Final decisions on suitability for publication rest with the Editors-in-Chief.

### Open Access

The *Journal of Neuroinflammation* is an open access journal. Open Access policy changes the way in which articles are published. First, all articles become freely and universally accessible online, and so an author's work can be read by

anyone at no cost. Second, the authors hold copyright for their work and can grant anyone the right to reproduce and disseminate the article, provided that it is correctly cited and no errors are introduced [10]. Third, a copy of the full text of each Open Access article is permanently archived in an online repository separate from the journal. *Journal of Neuroinflammation's* articles are archived in PubMed Central [11], the US National Library of Medicine's full-text repository of life science literature, and also in repositories at the University of Potsdam [12] in Germany, at INIST [13] in France and in e-Depot [14], the National Library of the Netherlands' digital archive of all electronic publications.

Open Access has four broad benefits for science and the general public. First, authors are assured that their work is disseminated to the widest possible audience, given that there are no barriers to access their work. This is accentuated by the authors being free to reproduce and distribute their work, for example by placing it on their institution's website. It has been suggested that free online articles are more highly cited because of their easier availability [15]. Second, the information available to researchers will not be limited by their library's budget, and the widespread availability of articles will enhance literature searching [16]. Third, the results of publicly funded research will be accessible to all taxpayers and not just those with access to a library with a subscription. As such, Open Access could help to increase public interest in, and support of, research. Note that this public accessibility may become a legal requirement in the USA if the proposed Public Access to Science Act is made law [17]. Fourth, a country's economy will not influence its scientists' ability to access articles because resource-poor countries (and institutions) will be able to read the same material as wealthier ones (although creating access to the internet is another matter [18]).

The concept of neuroinflammation offers new hope for understanding, prevention, and perhaps even cure of a number of chronic neurodegenerative diseases. Join us in this new field and this new endeavour! Publication is prompt and reader access is worldwide and free.

### Competing interests

None declared.

### Acknowledgements

Supported in part by NIH PO1 AG 12411, NIH P30 AG19606, and NIH RO1 AG 37989.

### References

- Griffin WST, Stanley LC, Ling C, White L, Macleod V, Perrot LJ, White CL III, Araoz C: **Brain interleukin 1 and S-100 immunoreactivity are elevated in Down syndrome and Alzheimer disease.** *Proc Natl Acad Sci USA* 1989, **86**:7611-7615.

2. Rogers J, Lubner-Narod J, Styren SD, Civin WH: **Expression of immune system-associated antigens by cells of the human central nervous system: relationship to the pathology of Alzheimer's disease.** *Neurobiol Aging* 1988, **9**:339-349.
3. Akiyama H, Barger S, Barnum S, Bradt B, Bauer J, Cole GM, Cooper NR, Eikelenboom P, Emmerling M, Fiebich BL, Finch CE, Frautschy S, Griffin WST, Hampel H, Hull M, Landreth G, Lue L-F, Mrak R, Mackenzie IR, O'Banion MK, Pachter J, Pasinetti G, Plata-Salaman C, Rogers J, Rydel R, Shen Y, Streit W, Strohmeyer R, Tooyoma I, Van Muiswinkel FL, Veerhuis R, Walker D, Webster S, Wegrzyniak B, Wenk G, Wyss-Coray A: **Inflammation and Alzheimer's disease.** *Neurobiol Aging* 2000, **21**:383-421.
4. Eikelenboom P, Bate C, Van Gool WA, Hoozemans JJ, Rozemuller JM, Veerhuis R, Williams A: **Neuroinflammation in Alzheimer's disease and prion disease.** *GLIA* 2002, **40**:232-239.
5. Orr CF, Rowe DB, Halliday GM: **An inflammatory review of Parkinson's disease.** *Progr Neurobiol* 2002, **68**:325-340.
6. Ishizawa K, Dickson DV: **Microglial activation parallels system degeneration in progressive supranuclear palsy and corticobasal degeneration.** *J Neuropathol Exp Neurol* 2001, **60**:647-657.
7. Gehrmann J, Banati RB, Wiessner C, Hossmann KA, Kreutzberg GW: **Reactive microglia in cerebral ischaemia: an early mediator of tissue damage?** *Neuropathol Appl Neurobiol* 1995, **21**:277-289.
8. Touzani O, Boutin H, Chuquet J, Rothwell N: **Potential mechanisms of interleukin-1 involvement in cerebral ischaemia.** *J Neuroimmunol* 1999, **100**:203-215.
9. Graeber MB, Scheithauer BW, Kreutzberg GW: **Microglia in brain tumors.** *GLIA* 2002, **40**:252-259.
10. **BioMed Central Open Access Charter** [<http://www.biomedcentral.com/info/about/charter>]
11. **PubMed Central** [<http://www.pubmedcentral.org>]
12. **Potsdam** [<http://www.uni-potsdam.de/over/homegd.htm>]
13. **INIST** [[http://www.inist.fr/index\\_en.php](http://www.inist.fr/index_en.php)]
14. **e-Depot** [<http://www.kb.nl>]
15. Lawrence S: **Free online availability substantially increases a paper's impact.** *Nature* 2001, **411**:521.
16. Velterop J: **Should scholarly societies embrace Open Access (or is it the kiss of death)?** *Learned Publishing* 2003, **16**:167-169.
17. **Open Access law introduced** [<http://www.biomedcentral.com/news/20030627/04>]
18. Tan-Torres Edejer T: **Disseminating health information in developing countries: the role of the internet.** *BMJ* 2000, **321**:797-800.

Publish with **BioMed Central** and every scientist can read your work free of charge

"BioMed Central will be the most significant development for disseminating the results of biomedical research in our lifetime."

Sir Paul Nurse, Cancer Research UK

Your research papers will be:

- available free of charge to the entire biomedical community
- peer reviewed and published immediately upon acceptance
- cited in PubMed and archived on PubMed Central
- yours — you keep the copyright

Submit your manuscript here:  
[http://www.biomedcentral.com/info/publishing\\_adv.asp](http://www.biomedcentral.com/info/publishing_adv.asp)

