

*Phill B Jones, Ph.D.*

[www.nmr.mgh.harvard.edu/~pjones](http://www.nmr.mgh.harvard.edu/~pjones)

[pjones@nmr.mgh.harvard.edu](mailto:pjones@nmr.mgh.harvard.edu)

## **EDUCATION**

---

### **Postdoctoral Research Fellow (2004-present)**

Mentor: Prof Bradley T. Hyman

Massachusetts General Hospital, Charlestown, MA

### **Ph.D. and DIC, Plasma and Atomic Physics (2003)**

Mentors: Dr Michael Coppins and Prof Patrick Carolan

Imperial College, London and UKAEA, Culham Science Center, Oxon

Thesis: An experimental investigation into Tokamak edge magnetohydrodynamic instabilities

### **BSc (Hons) Physics (1998)**

University of Manchester institute of Science and Technology

## **SKILLS AND TECHNIQUES**

---

### **Computer programming and IT**

- MATLAB, including graphical user interfaces, IDL
- Numerical simulations and novel data analysis applications

### **Optics**

- Optical design including microscopes and spectrometers
- Time correlated single photon counting, FLIM, FRET, optical plate readers

### **Management**

- Project management
- Experimental design

## **RESEARCH EXPERIENCE**

---

### **Postdoctoral Research Fellow, Department of Neurology, the Massachusetts General Hospital, 2004 to present**

- Technology development and biomedical engineering
  - Developed a multispectral excitation FLIM microscopy method to measure protein conformation and interaction differences in human and animal histological sections
  - Developed a method by which a time domain plate reader can be applied to questions of protein conformational changes or drug binding in a high throughput manner with far better specificity and accuracy than current systems
  - Modeled discrepancy from the true value as a result of linearizing the Beer-Lambert model of light absorption for intrinsic optical imaging of blood volume in animals
  - Developed a non-linear method for determination of changes in blood volume from changes in diffuse optical reflection

- Used combined multispectral reflectance imaging and speckle contrast to calculate changes in cortical metabolic oxygen consumption
- The role of intrinsically disordered proteins in neurodegenerative disorders
  - Significantly elucidated the isoform specific role of Apoelipoprotein E in senile plaque deposition in human Alzheimer brain
  - Measured time dependant changes in tau protein conformation in neurofibrillary tangles in transgenic Alzheimer mouse brains
  - Applied fluorescence correlation spectroscopy and novel burst analysis to describe synuclein aggregation in cultured cells; a Parkinson disease question
- Multimodal optical imaging of cerebral ischemia
  - Described the novel concept of the hemodynamic penumbra in ischemia and observed multi-stage vascular collapse, suggesting potential mechanism by which neuroprotection can be achieved
  - Demonstrated metabolic rescue effect of neuroprotective agent MK-801
  - Used peri-infarct depolarization as intrinsic functional activation to show differential regions of activation, thereby illustrating the effect of the neurovascular unit

**Ph.D. student, Plasma and Atomic Physics at Imperial College, London**

**UK Atomic Energy Authority, Culham Science Center, Oxford (1998-2003)**

- Combined helium atomic line spectroscopy and Doppler spectroscopy
  - Designed optical components to combine atomic line and Doppler spectrometers
  - Used diagnostic synergy to calculate changes in electric field during Edge Localized Mode instabilities in tokamak plasmas
- Identified novel mode of type III ELM, triggered by resistive ballooning mode, rather than peeling mode
  - Modeled magnetohydrodynamic stability boundaries for specific conditions and validated the model

**Research assistant, University of Manchester Institute of Science and Technology (1994 and 1997)**

- Categorized zeromagnetron plasma source for industrial applications using Langmuir probe
- Used stationary electric probe to describe plasma drift wave pattern in magnetron plasma source used for molecularly thin hard metal coatings
  - Observations explained the anomalous diffusion which leads to inefficient and dirty devices in industrial settings

**Research assistant, Fusion Research Center, Univ of Texas (1996)**

- Designed vacuum vessel for Texas mirror experiment plasma containment device
  - Modeled heavy ion beam path through complex magnetic field

**INVITED TALKS**

MassGeneral Institute for Neurodegenerative Disorders seminar (2008)

1<sup>st</sup> and 2<sup>nd</sup> Boston Workshop on Advanced TCSPC techniques (2007-2008)

Boston University physics department (2005)

MIT Alcator C-MOD project (1999)

---

## TEACHING EXPERIENCE

---

**Private Tutor**, 'A-level' advanced matriculation tuition, Cherwood College Oxford (2002)

**Intensive revision course**, High Wycombe Grammar school (2002)

---

## ADMINISTRATIVE AND MANAGEMENT EXPERIENCE

---

**Currently manage several interdisciplinary research projects with multiple peer collaborators as well taking an active role in mentoring graduate technicians**

**Weights captain of Wolfson College, Oxford (2002-3)**

- Administered, and managed budget for college athletic equipment

**Co-organizer of the Ahn, Joon-Wook graduate student seminar series at UKAEA (2000)**

- A series of seminars on topics such as fundamental plasma physics and the state of fusion research

**Secretary of the UMIST physics society (1997-8)**

- Organized professional, social, and charitable activities for undergraduate student body

---

## AWARDS AND HONORS

---

CASE industrial fellowship (1999-2001)

EPSRC research fellowship (1998-2001)

Graduated with upper division honors and received UMIST achievement award for highest score in final year exams (1998)

Erasmus study abroad grant (1996-7)

Local education award scholarship (1994-8)

---

## PUBLICATIONS

---

[Simultaneous multispectral reflectance imaging and laser speckle flowmetry of cerebral blood flow and oxygen metabolism in focal cerebral ischemia.](#) Jones PB, Kyoung Shin , David Boas, Bradley Hyman , Michael Moskowitz , Cenk Ayata , Andrew Dunn. Journal of Biomedical Optics. 13(4) (2008)

[Two post-processing techniques for the elimination of background autofluorescence for FLIM](#) Jones PB, Rozkalne A, Meyer-Luehmann M, Spires-Jones TL, Makarova A, Kumar AN, Berezovska O, Bacskai BJ, Hyman BT. Journal of Biomedical Optics. 13(1), pp-014008 (2008) [Download Citation](#)

[A time domain fluorescent plate reader for cell based protein-protein interaction and protein conformation assays](#) Jones P. B., Herl L., Berezovska O., Kumar A. N., Bacskai B. J. and Hyman B. T., Journal of Biomedical Optics, 11, (5), pp-054024, (2006) [Download Citation](#)

This article was featured in the [December 8th 2006 \(Vol 3 No 47\) issue of Cell based assay news.](#)

[In vivo imaging reveals dissociation between caspase activation and acute neuronal death in tangle-bearing neurons](#) Spires-Jones TL, de Calignon A, Matsui T, Zehr C, Pitstick R, Wu H, Osetek JD, Jones PB, Bacskai BJ, Feany MB, Carlson GA, Ashe KH, Lewis J, Hyman BT. J. Neurosci, 28(4): 862-867. (2008) [Download Citation](#)

- [Mild Induced Hypertension Improves Blood Flow and Oxygen Metabolism in Transient Focal Cerebral Ischemia](#) Shin HK, Nishimura M, Jones PB, Ay H, Boas DA, Moskowitz MA, Ayata C, Stroke, Epub ahead of print, Mar 13(2008) [Download Citation](#)
- [Age-dependent cerebrovascular dysfunction in a transgenic mouse model of cerebral amyloid angiopathy](#) Shin H. K., Jones P. B., Garcia-Alloza, M., Borrelli, L., Greenberg S. M., Bacskai B. J., Frosch M. P., Hyman B. T., Moskowitz M. A., and Ayata, C. Brain, 130, (Pt 9), 2310-9(2007) [Download Citation](#)
- [Normobaric hyperoxia improves cerebral blood flow and oxygenation, and inhibits peri-infarct depolarizations in experimental focal ischaemia](#) Shin HK, Dunn AK, Jones PB, Boas DA, Lo EH, Moskowitz MA, Ayata C, Brain, 130, 1631-1642(2007) [Download Citation](#)
- [A multicompartiment vascular model for inferring baseline and functional changes in cerebral oxygen metabolism and arterial dilation](#) Huppert, T. J., Allen, M. S., Benav, H., Jones, P. B. and Boas, D. A. J Cereb Blood Flow Metab, 27,6,p1262-1269. (2007) [Download Citation](#)
- [Impaired Spine Stability Underlies Plaque-Related Spine Loss in an Alzheimer's Disease Mouse Model](#) Spire-Jones TL, Meyer-Luehmann M, Osetek JD, Jones PB, Stern EA, Bacskai BJ, Hyman BT., Am J Pathol., 171(4): p. 1304-1311. (2007) [Download Citation](#)
- [Multimodal optical imaging of mouse Ischemic cortex.](#) Jones PB, Shin HK, Dunn AK, Hyman BT, Boas DA, Moskowitz MA, Ayata C. (2005) In: Optical Methods in Drug Discovery and Development (Analoui M, Dunn DA, eds): SPIE, p 60090X [Download Citation](#)
- [Ubiquilin 1 Modulates Amyloid Precursor Protein Trafficking and Abeta Secretion](#) Hiltunen M., Lu A., Thomas A. V., Romano D. M., Kim M., Jones P. B., Xie Z., Kounnas M. Z., Wagner S. L., Berezovska O., Hyman B. T., Tesco G., Bertram L. and Tanzi R. E., Journal of Biological Chemistry, 281, (43), p32240-32253, (2006) [Download Citation](#)
- [Interaction between Presenilin 1 and Ubiquilin 1 as detected by fluorescence lifetime imaging microscopy and a high throughput fluorescent plate reader](#) Thomas AV, Herl L, Spoelgen R, Hiltunen M, Jones PB, Tanzi RE. Hyman BT and Berezovska O. J. Biol. Chem., 2006: p. M601085200 [Download Citation](#)
- [Vasoconstrictive neurovascular coupling during](#) H K Shin, A K Dunn, P B Jones, D A Boas, M A Moskowitz C Ayata, J Cereb Blood Flow Metab, 26, 8, p1018-1030 (2006) [Download Citation](#)
- [Inboard gas puffing and behaviour of H-mode edge parameters in COMPASS-D](#) M Valovic, PG Carolan, AR Field, SJ Fielding, PB Jones, B Lloyd, H Meyer, M Price, V Shevchenko, K Stammers, MJ Walsh, S You, COMPASS-D and ECRH Teams. Plasma Phys Control Fusion 44 A175-A181 (2002)
- [ELM control in COMPASS-D](#) SJ Fielding, RJ Buttery, AR Field, PB Jones, H Meyer, M Valovic, HR Wilson, COMPASS-D and ECRH Teams. FC 4725, June 2001. EPS Madeira
- [H-mode edge investigations in the COMPASS-D Tokamak](#) PG Carolan, H Meyer, NJ Conway, AR Field, SJ Fielding, B Lloyd, PB Jones, MJ Walsh. FC 4730, June 2001. 28th EPS Madeira
- [Investigation of the influence of edge parameters on L-H mode transitions on COMPASS-D](#) H Meyer, PG Carolan, NJ Conway, AR Field, SJ Fielding, P Helander, PB Jones. 27th

European Physical Society Conference on Controlled Fusion and Plasma Physics Conference Proceedings, FC EPS 2000, 225

[Synergy of multiviewing spectroscopic diagnostics on COMPASS-D](#) PG Carolan, NJ

Conway, AR Field, PB Jones, H Meyer. Review of Scientific Instruments, 72, Issue 1, Part 11, January 2001. p.881-887 [Download Citation](#)

Studies of ETB evolution and stability on COMPASS-D tokamak AR Field, PG Carolan, NJ Conway, SJ Fielding, P Helander, PB Jones, HF Meyer, O Pogutse. J Plasma Fusion Res Ser, 4,pp 234-8. (2001)

## **REFERENCES**

---

Available on request