# Curriculum Vitae

## Phillip Lord

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### Career History

**Sept 2006 - Present:** School of Computing Science, Newcastle University. Lecturer.

**April 2005 - Sept 2006:** Manchester University, School of Computer Science, working on the ComparaGRID project.

**April 2002 - April 2005:** Manchester University, Department of Computer Science, working on the $^{my}$Grid project.

**April 2001 - April 2002:** Manchester University, Department of Computer Science, working on the IRBANE project, developing measures for Semantic Similarity.

**Jan 2000 - April 2001:** Manchester University, School of Biological Sciences, developing the CINEMA sequence alignment viewer.

**1998 - 2000:** Middlesex University/Institute of Child Health, developing the Photofit application.

### Degrees

**1993 - 1998:**  Ph.D. MRC Human Genetics Unit Edinburgh, investigating genes involved in centromere function in *Schizosaccharomyces pombe*.

**1989 - 1992:**  B.A.(Hons) Natural Sciences/Genetics 2:1 Trinity College, Cambridge.

## Research Statement

My research career has been in the overlap between **biology and computer science**, fostering communication between these communities to the benefit of both. Ideas from computer science need to be implemented and tested against real world problems to ensure their validity and usefulness. Biology and Bioinformatics need cutting edge solutions to the problems of structuring, searching and manipulating large quantities of complex and heterogeneous data.

My research has focused on **knowledge representation** technologies, including formal ontology languages such as OWL, developed by the **Semantic Web** Community, and the **Gene Ontology** (GO), developed by the model organism communities. This work has also been combined with work on the **Grid**, and **Semantic Web** technologies. In this work, I have placed an emphasis on developing and freely releasing well-engineered software to ensure the maximum uptake of the research and generated technologies within the biological community.

In more recent years, I have extended my research to additional fields; with the CARMEN project, I have been investigating the use of metadata within the Neurosciences; during this work we have generated the first "Minimal Information" within neurosciences and contributed heavily to OBI (Ontology for Biomedical Investigations), both in general and specifically to support the description of neuroscience. The ONDEX project is aimed at data integration and visualisation for systems biology. I am currently engaged in enchancing the semantic underpinning for this system.

I have also increased my international reputation with a number of **invited talks**, and as **Co-Chair of the Annual Bio-Ontologies Meeting** at ISMB 2004-2009.

**Current and Previous Projects**

**April 2008 - Present: ONDEX**

- ONDEX is a data integration and graph visualisation environment, aimed at complex data sets, particularly useful for systems biology.
- I am a co-investigator responsible for increasing the semantic component of ONDEX, to extract additional value from the data.

**Sept 2006 - Present: CARMEN**

- This project is producing an infrastructure for sharing of data and computational tools with neurosciences.
- I am a co-investigator and primarily responsible for the development of metadata appropriate to describe these experiments.

**April 2005 - Sept 2005: ComparaGrid**

- This project is aimed at integrating bioinformatics databases controlled by various partners.
- The work will involve the development of Ontologies describing the domain, and their integration with a Web Services framework.

**April 2002 - April 2005: The $^{my}$Grid project**

- This project, part of the UK eScience program, is aimed at enabling access to complex heterogeneous data through a Service Orientated, Grid architecture.
- We have developed services, workflow engines and development environments which enable the end biologist providing a middleware environment to enable biologists to perform various analyses, over information such as genomic DNA, and microarray expression data.
- By providing Semantic descriptions of the services, we have enabled this composition, and subsequently the browsing of these results.
- We are currently investigating further integration and visualisation of these results. Additionally, we will release an OBO ontology as described earlier.

**April 2001 - April 2002: The Irbane project**

- I applied measures for "semantic similarity" to the Gene Ontology, which are both useful for searching and validating GO annotated databases.
- Following our publications, a number of international groups are applying, extending or developing alternatives to these measures.

**Jan 2000 - April 2001: CINEMA**

- Developed a large Java application for viewing, editing and interacting with multiple sequence alignments.
- This work lead, in part, to current projects at Manchester on enhanced visualisation techniques for bioinformatics.

**1998 - 2000: The Photofit**

- Developed an application to enable an image query over a large database of Dysmorphic Patient data.

## Grants Held

- BBSRC BB/F006039/1, ONDEX

- EPSRC CARMEN

## Teaching and Training Statement

I have had significant teaching experience as a Lecturer at Newcastle. I have taught mostly at Masters level, including a period as Director of the Bioinformatics and Computational Systems Biology programme. During this time, I was primarily responsible for a BBSRC Masters Training Grant, providing studentships over three years, recognizing the excellence of the programme.

My cross-disciplinary background means that I am capable of teaching and training individuals from a **wide variety of backgrounds**, including Biologists, Bioinformaticians, and Computer Scientists, and have done so in both national and international contexts.

## Activities

Selected activites. For full list see `http://homepages.cs.ncl.ac.uk/ phillip.lord/`

### Publications

### Papers in Refereed Journals

C. Wroe, C. Goble, M. Greenwood, P. Lord, S. Miles, J. Papay, T. Payne, and L. Moreau. Automating experiments using semantic data on a bioinformatics grid. *IEEE Intelligent Systems*, 19(1):48–55, 2004

K. Wolstencroft, P. Lord, L. Tabernero, A. Brass, and R. Stevens. Protein classification using ontology classification. *Bioinformatics*, 22(14):e530–538, 2006

M. Aranguren, S. Bechhofer, P. Lord, U. Sattler, and R. Stevens. Understanding and using the meaning of statements in a bio-ontology: recasting the Gene Ontology in OWL. *BMC Bioinformatics*, 8(1):57, 2007

P. W. Lord, R. D. Stevens, A. Brass, and C. A. Goble. Investigating semantic similarity measures across the Gene Ontology: the relationship between sequence and annotation. *Bioinformatics*, 19(10):1275–83, 2003

R. Stevens, C. Wroe, S. Bechhofer, P. Lord, A. Rector, and C. Goble. Building ontologies in DAML + OIL. *Comparative and Functional Genomics*, 4(1), 2003

P.W.Lord, J.N.Selley, and T.K.Attwood. CINEMA-MX: A modular multiple alignment editor. *Bioinformatics*, 18(10):1402–03, 2002

**Papers at Refereed Conferences**

P. Lord. An Evolutionary Approach to Function. In *Bio-Ontologies 2009: Knowledge in Biology*, 2009

A. Lister, P. Lord, M. Pocock, and A. Wipat. Annotation of SBML Models through Rule-Based Semantic Integration. In *Bio-Ontologies 2009: Knowledge in Biology*, 2009

K. Garwood, P. Lord, H. Parkinson, N. W. Paton, and C. Goble. Pedro ontology services: A framework for rapid ontology markup. In A. Gómez-Pérez and J. Euzenat, editors, *European Semantic Web Conference*, pages 578–591. Springer-Verlag, 2005

P. Lord, P. Alper, C. Wroe, and C. Goble. Feta: A light-weight architecture for user oriented semantic service discovery. In A. Gómez-Pérez and J. Euzenat, editors, *European Semantic Web Conference*, pages 17–31. Springer-Verlag, 2005

S. Bechhofer, R. Stevens, and P. Lord. Ontology Driven Dynamic Linking of Biology Resources. In R. B. Altman, A. K. Dunker, L. Hunter, T. A. Jung, and T. E. Klein, editors, *Pacific Symposium on Biocomputing (PSB) 2005*, pages 79–90. World Scientific, 2005

P. Lord, S. Bechhofer, M. D. Wilkinson, G. Schiltz, D. Gessler, D. Hull, C. Goble, and L. Stein. Applying semantic web services to bioinformatics: Experiences gained, lessons learnt. In *International Semantic Web Conference*, pages 350–364, 2004

R. Stevens, H. Tipney, C. Wroe, T. Oinn, M. Senger, P. Lord, C. Goble, A. Brass, and M. Tassabehji. Exploring Williams Beuren Syndrome Using $^{my}$Grid. In *Bioinformatics*, volume 20, pages i303–310, 2004. Intelligent Systems for Molecular Biology (ISMB) 2004

P. Lord, C. Wroe, R. Stevens, C. Goble, S. Miles, L. Moreau, K. Decker, T. Payne, and J. Papay. Semantic and personalised service discovery. In *Proc UK e-Science All Hands Meeting 2003*, pages 787–794. EPSRC, 2003. ISBN 1-904425-11-9

S. Bechhofer, R. Volz, and P. Lord. Cooking the semantic web with the OWL API. In *Internaional Semantic Web Conference*, pages 659 – 675, 2003

P. Lord, R. Stevens, A. Brass, and C. Goble. Semantic similarity measures as tools for exploring the Gene Ontology. In *Pacific Symposium on Biocomputing*, pages 601–612, 2003

P. Lord, J. Reich, A. Mitchell, R. Stevens, T. Attwood, and C. Goble. PRECIS: An automated pipeline for producing concise reports

about proteins. In *IEEE International Symposium on Bio-informatics and Biomedical engineering*, pages 59–64. IEEE press, November 2001

**Books**

R. Stevens and P. Lord. Application of ontologies in bioinformatics. In S. Staab and R. Studer, editors, *Handbook on Ontologies in Information Systems*. Springer, second edition, 2008. In press

R. Stevens, P. Lord, and D. Hull. Using distributed data and tools in bioinformatics applications. In *Bioinformatics From Genomes to Therapies*. Wiley, VCH, 2007

P. Lord, R. D. Stevens, C. A. Goble, and I. Horrocks. Description Logics: OWL and DAML+OIL. In *Genetics, Genomics, Proteomics, and Bioinformatics*. Wiley, 2004. Invited Article In Press

R. Stevens, C. Wroe, P. Lord, and C. Goble. Ontologies in bioinformatics. In S. Staab and R. Studer, editors, *Handbook on Ontologies*, pages 635–657. Springer, 2003

**Invited Presentations**

P. Lord. Migrating to the Semantic Web: Bioinformatics as a case study. The First European Workshop on Semantic Web Applications in Biomedicine, 2004. Balatonfüred, Lake Balaton, Hungary

P. Lord. Knowledge in Middleware for *in silico* Biology. AgentLink III Technical Forum:- Agents in Bioinformatics., 2004. Rome, Italy

P. Lord. Semantic Similarity:- Measuring Similarity across the Gene Ontology. GO Users Meeting, 2002. Hinxton, UK

**Professional Activities**

**2004-2006** Chair of the Annual Bio-Ontologies Meeting, organised as a Special Interest Group at ISMB

**2005** Programme Committee: ECCB 05 Workshop on Biomedical Ontologies and Text Processing

**2005** Programme Committee: ISMB 05

**2005** Programme Committee: 3rd Healthcare Digital Libraries Workshop.

**2004-2005** Programme Committee: International Workshop on Grid Computing and its Application to Data Analysis (GADA)

**Sept 2004** Programme Committee: First International Workshop on Scientific Applications on Grid Computing (SAG '04)

Reviewed numerous papers for leading journals, such as Bioinformatics, J. Parallel and Distributed Computing, IMIA Yearbook of Medical Informatics, and conferences including ISMB (2004-2004), PSB(2004-2005), ISWC (2003-2004), SIGMOD (2004), and many workshops.

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