

Aurélien Mazurie, Ph.D.

4, rue Rosa Bonheur
94000 Créteil, France

Cell Phone +33 6 80 21 71 70
E-mail aurelien.mazurie at oenone.net
Website <http://oenone.net/contact/>

Profile

Scientific Interests *Integrative biology* (regulation of biological processes, emergent behaviors of biological systems, biological networks evolution and structure), *bioinformatics* (exploitation of high-throughput biological datasets, knowledge databases and biological knowledge formalization).

Education

- **Ph.D. in Computational and Molecular Biology** (*with highest honors*) Jun. 2001 – Jan. 2005
Paris VI (Pierre & Marie Curie) University. Paris, France
- **DEA (Master's Degree) in Molecular Biology** (*with honors*) Oct. 2000 – Jun. 2001
Paris VI (Pierre & Marie Curie) University. Paris, France
- **Maîtrise (B.Sc.) in Biochemistry** Oct. 1999 – Jun. 2000
Paris VI (Pierre & Marie Curie) University. Paris, France

Languages English (fluent), French (native)

Research Experience

- **Senior Post-Doctoral Research Fellow** Nov. 2006 – Present
Systems Biology Unit. Institut Pasteur. Paris, France
PI: Benno Schwikowski, Ph.D.
 - Impact of evolutionary pressures on metabolic network organization
 - Identification of functional modules from genome-scale, high-throughput data
- **Post-Doctoral Research Fellow** May. 2005 – Oct. 2006
Center for the Study of Biological Complexity. Virginia Commonwealth University. Richmond, VA, USA
PI: Gregory A. Buck, Ph.D.
 - Relationship between phylogeny and metabolic network organization (1 article, 1 book chapter)
 - Inference of gene essentiality from genome-scale data (1 article)
 - Characterization of metabolic capabilities from expression data (1 article)
 - Comparative genomics of two *Cryptosporidium* species
- **Ph.D. Student** Oct. 2001 – Jan. 2005
Laboratoire de Génétique de la Neurotransmission – CNRS UMR 7091. Hopital Pitié-Salpêtrière. Paris, France
Advisor: Jacques Mallet, Ph.D.
 - Small-scale organization of gene regulatory networks (1 article, 1 book chapter)
 - Inference of gene regulatory networks structure from expression data (1 article, 2 book chapters)
 - Development of double-channel radioactive microarray technology (1 article)
- **Consultant** Jun. 2002
Opsis S.A., France
Consultant on DNA microarrays technology: acquisition, processing and exploitation of data for medical diagnoses.

Publications & Presentations

Papers (4, plus 1 submitted) in refereed international journals:

- **Phylogenetic distances are encoded in networks of interacting pathways**
Mazurie A, Bonchev D, Schwikowski B, Buck GA
To appear in Bioinformatics — Impact Factor: 5.039
- **An evolutionary and functional assessment of regulatory network motifs**
Mazurie A, Bottani S, Vergassola M
Genome Biology, 2005 6(4):R35 — Impact Factor: 6.59
- **Gene networks inference using dynamic Bayesian networks**
Perrin BE, Ralaivola L, **Mazurie A**, Bottani S, Mallet J, d'Alché-Buc F
Bioinformatics, 2003 19(2):II138-II148 — Impact Factor: 5.039
- **A novel sensitive microarray approach for differential screening using probes labeled with two different radio-elements**
Salin H, Vujasinovic T, **Mazurie A**, Maitrejean S, Menini C, Mallet J, Dumas S
Nucleic Acids Research, 2002 30(4):e17 — Impact Factor: 6.954
- **Comparative genomics of Cryptosporidium**
Mazurie A, Alves JM, Ozaki LS, Schwartz DC, Buck GA
Submitted

Reviews (1) in refereed international journals:

- **Integrating genome-scale data for gene essentiality prediction**
Roberts SB, **Mazurie A**, Buck GA
Chemistry and Biodiversity, 2007 4(11):2618-2630 — Impact Factor: 1.616

Papers (1) in refereed international conferences:

- **Path-a-Way: a strategy for network analysis of microarray data**
Arasappan D, **Mazurie A**, Alves J, Bonchev D, Buck GA
International Conference on BioMedical Engineering and Informatics, pp. 432-436 (2008)

Book chapters (4) :

- **Metabolic networks and the phylogeny of species**
Mazurie A, Bonchev D, Buck GA
In 'Analysis of biomolecular structures and interaction networks', Kuznetsov VA editor, CRC/Taylor & Francis (2008)
- **Genetic networks: between theory and experimentation**
Bottani S, **Mazurie A**
In 'Complex population dynamics: nonlinear modeling in ecology, epidemiology and genetics', Blasius B, Kurths J, and Stone L editors, World Scientific, pp. 215-236 (2007)
- **A dynamic model of gene regulatory networks based on inertia principle**
d'Alché-Buc F, Lahaye PJ, Perrin BE, Ralaivola L, Vujasinovic T, **Mazurie A**, Bottani S
In 'Bioinformatics using Computational Intelligence Paradigms', Seiffert U editor, Springer, pp. 93-118 (2005)
- **Réseaux bayésiens dynamiques pour l'inférence de structure de réseaux de régulation**
Ralaivola L, Perrin BE, d'Alché-Buc F, **Mazurie A**, Bottani S
In 'Informatique pour l'analyse du transcriptome', Boulicaut JF and Gandrillon O editors, Lavoisier, pp. 291-319 (2004)

Invited talks (5) :

- **An evolutionary perspective on functional modules in metabolic networks**
Workshop on Systems Biology & Networks, Institut Pasteur, Paris (Sep 22, 2008)
- **Modularity in intracellular systems**
3ème Journée de Biologie Systémique, Paris V (Descartes) University, Paris (Apr 16, 2008)
- **Functional modules in intracellular systems: where are we?**
Modularity in Synthetic Biology, Genopole, Evry (Mar 21, 2008)
- **An evolutionary and functional assessment of regulatory network motifs**
Modularité, Compositionnalité et Abstraction dans les réseaux géniques et protéiques, Institut Henry Poincaré, Paris (Nov 21, 2007)
- **Identification of biologically relevant modules in cells**
Journées départementales de l'Institut Pasteur, Institut Pasteur, Paris (Jun 14, 2007)

Technical Skills

Knowledge representation and inference Machine learning (Weka, Orange toolkits), statistics (R, JMP), rules engines (CLIPS, Jess)

Knowledge representation Relational databases (MySQL, PostgreSQL, Oracle, and any other SQL-compliant RDBMS), XML (XPath, XSLT), UML, ontologies (RDF, OWL)

Software development Python, Java (J2SE), PHP, Perl, C/C++

Web development HTML₄, CSS₃, JavaScript, RPC (SOAP), REST, CGI (Python and Perl)

Operating systems administration Windows (95 to XP), Linux, MacOS X (FreeBSD)

Grid computing OpenPBS (Portable Batch System) and SGE (Sun Grid Engine) schedulers

Bioinformatics toolboxes BioJava, BioPython, Taverna, BioMoby, Cytoscape, EMBOSS

Examples of bioinformatics tools developed at <http://oenone.net/tools/>

Teaching Experience

- **Vacataire (Lecturer)** Jan. 2005 – Apr. 2005
Paris XIII University. Bobigny, France
Courses (100h): Introduction to Bioinformatics. Audience: biology undergraduate students.
- **Moniteur (Lecturer)** Oct. 2001 – Jun. 2004
Paris XIII University. Bobigny, France
Courses (120h): Cellular Biology, Genetics, Embryology. Audience: biology undergrads and medschool students.
- **Tutor**
Private courses in mathematics. Audience: high school students.

Advisees

2007: **Thomas Rolland (5 months)** *Master student in bioinformatics (Paris VII University), Engineering student in Bioinformatics and Modeling (INSA Lyon)*. Biological relevance of network modularization techniques.

2004: **Agnès Floresco (5 months)** SummerCat, a tool to interpret lists of genes of interest, **Loïc Fosse (4 months)** *Engineering student in Software development (EPITA Paris)*. Development of GeNetDB, a toolbox for gene regulatory networks study.

2003: **Julien Lambert (3 months)** , **Virginie Bernard (3 months)** *Master students in bioinformatics (Paris VII University)*. Building a knowledge database of gene regulatory networks.

Other

Community involvement Secretary of the french BioDocs association in 2003, helping contacts between private research companies and PhDs. Co-organizer of the BioTechno2002 and BioTechno2003 forums.

Memberships AAAS (American Association for the Advancement of Science), ISCB (International Society for Computational Biology)

References

Charles Auffray, Ph.D., System biologist
Director, CNRS UMR 7091
e-mail: charles.auffray@vjf.cnrs.fr
phone: +33 1 49 58 34 97

Functional Genomics and Systems Biology for Health
CNRS UMR 7091
7, rue Guy Moquet – BP 8
94801 Villejuif CEDEX, France

Florence d'Alché-Buc, Ph.D., Computer scientist
Professor, Computer Science
e-mail: florence.dalche-buc@pasteur.fr
phone: +33 1 40 61 34 54

Unité de Génétique Moléculaire des Levures
Institut Pasteur
25, rue du Docteur Roux
75015 Paris, France

Samuele Bottani, Ph.D., Physicist
Assistant professor, Physicist
e-mail: bottani@paris7.jussieu.fr
phone: +33 1 57 27 62 88

Laboratoire Matière et Systèmes Complexes
Case courrier 7056, room 813A
Batiment Condorcet
Université Paris Diderot
10, rue Alice Domon et Léonie Duquet
75205 Paris CEDEX 13, France