

**Sylvie RODRIGUEZ  
ARNAVIELHE**

***Ph.D\_ Molecular Microbiologist  
Bioinformatic***

**Specialist in large scale genetic analysis,  
genomic and post-genomics  
Web site designer for scientific projects and communication**

French  
born: September the 28th, 1970  
in Créteil (France)

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### **OBJECTIVES**

- ◆ a more efficient access and utilization of scientific information and communication via all multimedia tools now available
- ◆ development of bioinformatic tools for upcoming large scale sequencing (genomics) and post-genomic (transcriptome, proteome...)
- ◆ a speeding process for genes discovery, target and diagnostic genes identification

### **ACADEMIC FORMATION**

- 1997 : Biological Sciences Ph.D.:** “Genetical and epidemiological study of *Candida albicans* strains isolated in non neutropenic patients”. Montpellier I-University France
- 1994 : Master** in “Evolution and Ecology”, specialized in: "Evolution and Evolutive Ecology", Montpellier II-University France.
- 1993 : Graduate** in Organisms and Population Biology, specialized in "Genetic and Evolution" Montpellier II-University France.
- 1992 : License** in Organisms Biology, Montpellier II-University France

## PROFESSIONAL SCIENTIFIC EXPERIENCES *post-doctoral*

**Since October 2000**

***Post doctoral position 3: Candida albicans Genome Annotation***

Department of Biotechnology, [Pasteur Institute](#) –Paris. Two consortium ([RIE](#), Fungal Infection Network) and [Galar Fungail](#) are joining efforts to annotate the *Candida albicans* genome, sequenced at Stanford, and publicly released.

**August 1999- August 2000**

***Post doctoral position 2: Streptococcus pneumoniae Genome Diversity Project.***

Department of Microbiology, [University of Alabama at Birmingham](#) (AL)

This project follows the complete genome sequencing of a *S. pneumoniae* strain at [TIGR](#) (The Institute of Genomic Research) and the participation of the annotation of this complete genome. Fourteen strains have been chosen to try to span the breadth of diversity within this species. Up to 25 different 10kbp regions will be sequenced from each of the 14 strains. These data will provide an important resource for hypotheses addressing intra-species genetic diversity. Former collaboration with [Eli Lilly](#). Collaboration with TIGR and [Affymetrix](#) to study the virulence factors of *S. pneumoniae*.

Elaboration of a [web site](#) presenting this project, amplification of 10kb regions, library making, sequencing, analysis and management of data, analysis of contigs and sequences, population genetic.

**July 1998-August 1999**

***Post doctoral position 1: Genomic Diversity of Common Fungi***

Department of Plant-pathology, [Cornell University](#) (NY)

Start-up of the project that involves the screening of the wild diversity of fungi in a preserve area (south of Ithaca NY). The screening for diversity was the first step before screening the all fungi collection for potential secondary metabolites. The project is described on a [web site](#), most of the results are the property of [Schering-Plough](#). Collaboration with Schering-Plough and Eli Lilly.

Directed mutagenesis, overexpression of gene, deletion of gene, crossing between strains, Northern Blot, Southern Blot, PCR, cloning, sequencing, analysis of diversity, comparison of sequences.

**January 1998 - June 1998**

***Research assistant in epidemiology: Oxidative marker of the Motor Neuron Disease.***

Clinical Sciences department, Veterinary College of Cornell University (NY): Function of certain enzymes in Equine Motor Neuron Disease (EMND) a neurodegenerative disorder of the somatic lower motor neurons that results in a syndrome of diffuse neuromuscular disease in the adult horse

Western Blot, determination of enzymatic activity, oxidative markers detection

## PROFESSIONAL SCIENTIFIC EXPERIENCES pre-doctoral

**1994 - 1997**

**Ph.D.: Genetical and epidemiological study of *Candida albicans* strains isolated in non neutropenic patients.** Immunology and Parasitology Laboratory, Montpellier, France: microbiological cultures and identification, yeasts cloning, bio-molecular typing methods (MLEE, REA, RAPD, inter-repeated sequences PCR), antifungal susceptibility analysis (E-test method), clinical survey, genetic distances analysis (Neighbor Joining method), multidimensional analysis (Factorial Correspondences Analysis, Canonic Correlations Analysis)

**1993 - 1994**

**Master: Phylogenetic analysis on *Brucella* sp.** INSERM (U65) Medical Microbiology Laboratory, Montpellier, France: PCR, cloning, gene sequencing, repetitive sequences study, study of pathogenic factors, genetic distances analysis

**1993 - 1994**

**Master: Coevolution *Ficus* and its pollinisor study** C.N.R.S. Evolution of Genetic Systems Laboratory, Montpellier, France: measure of flowers, statistical analysis

**1993- 1994**

**Master:** Historic and conservation problems of the European Buffalo in the Bialowieza national park (Poland). *In situ* observations, organization of a meeting with the Bialowieza national park conservator and french national and regional parks directors

**1992- 1993**

**Graduate : *Brucella* genome repetitive sequences study** INSERM (U65), Montpellier, France: REA, Southern Blot, Northern Blot

### LANGUAGES

**French:** native language

**English :** spoken and written fluently  
(lived 3 years in United-States)

**German:** spoken  
(conversational)

### COMPUTER SKILLS

Use of Word, Excel, Adobe-Photoshop, Front Page, Netscape, Correl draw, Power Point, Canvas....packages

Use of **molecular biology packages** (DNASTar, GeneJockey, NIH analyzer, MacroBioSoft, BioEdit, DNAclub, MacVector, Sequencher...),  
of **molecular phylogeny packages** (Phylip, PCgene, Treecon, PAUP)  
of **multidimensional analysis packages** (GenePop, Praxis...), of  
**multivariables analysis software** (S.A.S.),  
of **population genetic** (Homoplasy test, PhylPro, MEGA, SITE, reticulate...),  
of **large scale sequencing analysis packages** (Phred/Phrap, Consed, GCG)

Programation : HTML (level IV) , Java Script, DHTML, PHP3, Shockwave...

## MAIN FIELDS OF STUDY

<b>Bio-Informatic</b>	<p>Assembly of contigs          Large scale DNA sequence analysis          Genome annotation          Database management          Diversity and recombination study          Scientific communication on genomic diversity projects</p>
<b>Population genetic</b>	<p>Analysis of yeast and filamentous fungi reproduction mode          Analysis of genomic differentiation according to geographical isolation          Analysis of evolution of characters, analysis of recombination, mosaic genomes</p>
<b>Phylogeny</b>	<p>Classification and comparison of bacteria and fungi genomic information          Analysis of polymorphism intra-species, geographical isolation analysis</p>
<b>Diversity</b>	<p>Comparison of genotypes, comparison of sequences          Taxonomy          Study of virulence factors (DNA chips micro-arrays technology)</p>
<b>Microbiology</b>	<p>Identification of bacteria, yeast, fungi          Determination of yeast and fungi susceptibility to anti-fungal and drugs          Transformation of bacteria, yeast and fungi, cloning</p>
<b>Epidemiology</b>	<p>Determination of the origin of infectious diseases (candidiosis)          Estimation of the diversity of yeast infective strains          Diagnostic of neuro-degenerescence by oxidative enzymatic markers</p>
<b>Molecular biology</b>	<p>Protein/enzyme extraction          DNA extraction, purification, PCR, RAPD, REA, Southern Blotting, Western Blotting, Northern Blotting, RNA purification, cDNA bank, cloning, sequencing, site directed mutagenesis, transformation , protein expression in vivo, deletion of gene in vivo, multiple mutants construction          Libraries construction for large scale sequencing</p>
<b>Enzymology</b>	<p>Extraction and revelation of specific enzyme activities on gels, by spectrophotometric method,          Detection of global concentration of enzymes</p>

## Web Sites

Cornell University: <http://www.cornell.edu>

Cornell Center for Fungal Biology: <http://ccfb.cornell.edu>

University of Alabama at Birmingham (UAB): <http://www.uab.edu>

*S.pneumoniae* Genome Diversity Project\*: <http://genome.microbio.uab.edu/strep/>

The Lancefield Society\*: <http://www.dnaseq.uab.edu/Lancefield/>

DNA sequencing core facility\*: <http://www.dnaseq.uab.edu>

TIGR: <http://www.tigr.org>

Eli Lilly: <http://www.lilly.com>

Schering-Plough: <http://schering-plough.com>

Personnal web site\*: <http://www.angelfire.com/az2/SRodriguez>

\*sites designed by Sylvie Rodriguez

<b>SUM UP OF SKILLS / BIOTECHNIQUES</b>	
<b>Molecular Biology</b>	<b>Computer analysis</b>
<p><b>All usual molecular biology techniques, and analysis tools</b></p> <p>Protein/enzyme extraction  DNA extraction, purification, PCR, RAPD, REA, Southern Blotting, Western Blotting, Northern Blotting, RNA purification, cDNA bank, cloning, sequencing, site directed mutagenesis, transformation , protein expression in vivo, deletion of gene in vivo, multiple mutants construction, in vitro random transposition for gene function study. Libraries construction for large scale sequencing</p> <p><i>Candida albicans</i> biofilm elaboration and study</p>	<p>Annotation of prokaryotic and eukaryotic organisms</p> <p>Assembly of contigs  Large scale DNA sequence analysis  Genome annotation  Database management  Diversity and recombination study  Scientific communication on genomic diversity projects</p> <p style="text-align: center;"><b>Work on UNIX environnement</b></p> <p><b>Developing our own tools for genome annotation</b></p> <p>Use of <b>molecular biology packages</b> (DNASTar, GeneJockey, NIH analyzer, MacroBioSoft, BioEdit, DNAclub, MacVector, Sequencher...),  of <b>molecular phylogeny packages</b> (Phylip, PCgene, Treecon, PAUP)  of <b>multidimensional analysis packages</b> (GenePop, Praxis...), of <b>multivariables analysis software</b> (S.A.S.),  of <b>population genetic</b> (Homoplasy test, PhylPro, MEGA, SITE, reticulate...),  of <b>large scale sequencing analysis packages</b> (Phred/Phrap, Consed, GCG)</p>
<p>Training and supervising of many international students</p> <p>Constant update and personal training</p>	

## OTHER EXPERIENCES

Organization of meeting between french national parks headquarters, in Bialowieza forest (Poland)[1994].  
 Participation of a meeting organization with french mycologists in Montpellier (France)[1996].  
 Following complementary courses: in pedagogy, urbanism and environmental law, comptability, HTML programation, JavaScript, Excell, Power Point and Front Page on MS2000 [1995-2000].  
 Private teacher for three years [1994-1997].

## REFERENCES

**Dr. Susan K. HOLLINGSHEAD** Professor, University of Alabama at Birmingham, Microbiology department, 845, 19<sup>th</sup> street south (Box #25), Birmingham AL 35294 USA Email: Susan\_Hollingshead@microbio.uab.edu

**Dr. B. Gillian TURGEON** Associate Professor, Cornell University, Plant Pathology department, 334 plant Science building, Ithaca NY 14853. USA E-mail: bgt1@cornell.edu

**Dr. Francois RENAUD** Directeur de Recherche-Centre d'Etude sur le Polymorphisme des Micro-Organismes, CEPM/UMR CNRS-ORSTOM 9926, Equipe: "Evolution des Systèmes Symbiotiques", ORSTOM, 911 Avenue Agropolis, B.P. 5045, 34032 Montpellier Cedex1 Email: renaud@cepm.mpl.orstom.fr  
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**Pr. Jean-Marie BASTIDE** Directeur du laboratoire de Parasitologie et Immunologie, Faculte de pharmacie, 15 rue Ch. Flahault, 34060 Montpellier cedex2  
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## CURRENTLY

Post-doc at the Pasteur Institute

- ◆ Bioinformatic: Computer analysis of large scale sequencing; Genome annotation
- ◆ Designing experiments of Transcriptome and Proteome, to follow the Genome analysis
- ◆ Development of web sites (with restricted access) as scientific tools for our project. The public versions of these web sites are:  
<http://www.pasteur.fr/RIF/>  
[http://www.pasteur.fr/Galar\\_Fungail/](http://www.pasteur.fr/Galar_Fungail/)

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**SCIENTIFIC PUBLICATIONS**

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Genetic and epidemiological study of *Candida albicans* strains isolated in non neutropenic patients. 1997 (December) Thesis. University of Montpellier I. **S. Arnavielhe**.

- ◆ Suivi mycologique d'infections à *Candida albicans* dans divers services hospitaliers: typage moléculaire des souches isolées et enquête épidémiologique. Pathologie- Biologie. 1996 May, 44, 447-451.  
**S. Arnavielhe**, A. Blancard, M. Mallié, F. Gouin, A. Ottomani, J.-C. Manelli, J.-M. Bastide.
- ◆ Multilocus Enzyme Electrophoresis Analysis of *Candida albicans* isolates from three intensive care units : Epidemiological study. Mycoses Oct 1997. 40(5-6) 159-167. **S. Arnavielhe**, A. Blancard, M. Mallié, M. Quilici, J.-M. Bastide.
- ◆ *Candida albicans* infections survey at delivery: Vertical transmissions of strains to neonates. Journal of Infection Jan 2000 ;40(1):88-90. **S. Arnavielhe**, A. Blancard, M. Mallié, J.-M. Bastide.
- ◆ Multicentric genetic study of *Candida albicans* isolates from non neutropenic patients using MLEE typing: population structure and mode of reproduction. Mycoses 2000; 43 (3-4), 109-117. **S. Arnavielhe**, T. De Meüs, A. Blancard, M. Mallié, F. Renaud, J.-M. Bastide.

Chapter 18. *Streptococcus spp.* of the book: " International Handbook of Food Pathogens " Jeffrey Bier and Mariann D. Miliotis, Editors  
Barry M. Gray and **Sylvie Rodriguez Arnavielhe**.

- ◆ Comparison of *Candida albicans* Isolates from HIV-Positive and-Negative Patients by Multilocus Enzyme Electrophoresis. (Submitted). **S. Arnavielhe**, R. Le Guennec, M. Mallié, J.-M. Bastide.
- ◆ Correlation between in vitro sensitivity to fluconazole and amphotericin B of clones and isolates and clinical outbreaks of *Candida albicans* infections in non neutropenic patients. (Submitted). **S. Arnavielhe**, A. Blancard, M. Mallié, J.-M. Bastide.
- ◆ Biodiversity of Atypical *Candida albicans* Strains Isolated From AIDS Patients. (Submitted). **S. Arnavielhe**, R Le Guennec, M Mallié, J.-M. Bastide.
- ◆ Oropharyngeal Candidiasis in AIDS Patients from Ivory Coast: Antifungal Susceptibilities and Multilocus Enzyme Electrophoresis Analysis of *Candida albicans* Isolates. Pathologie-Biologie. 1998 May; 46(5):307-314. NG. Nébavi, **S. Arnavielhe**, R. Le Guennec, E. Ménan, A. Kacou, P. Combe, E. Aoussi, M. Mallié, M. Kone, J.-M. Bastide.
- ◆ Cloning, expression, and phylogeny of an *Aspergillus flavus* phytase. (submitted in Microbiology). E. Rodriguez, **S. Arnavielhe** and X.G. Lei.

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## ORAL COMMUNICATIONS

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- Suivi mycologique d'infections à *Candida albicans* dans divers services hospitaliers: typage moléculaire des souches isolées et enquête épidémiologique. RICAI congress in Paris, december 1995, French Society of Mycology, Montpellier june 1996, **S. Arnavielhe**, A. Blancard, P. Auquier, M. Mallié, J.-M. Bastide.
- Isolement de *Candida albicans* lors d'accouchements:transmission et sensibilité à l'amphotéricine B et au fluconazole. French Society of Mycology, Arcachon, May, 1997. **S. Arnavielhe**, A. Blancard, M. Mallié, J.-M. Bastide.
- Susceptibility of *Candida albicans* clinical strains and related clones for amphotericin B and fluconazole by E-test method. Correlation between clinical observations and in vitro results. ISHAM Parme june 1997. **S. Arnavielhe**, A. Blancard, M. Korenian, M. Mallié, J.-M. Bastide.
- Candidoses oropharyngées a *Candida albicans* chez des patients VIH positifs en Côte d'ivoire: Sensibilité aux antifongiques et typage isoenzymatique des isolats. French Society of Mycology, Arcachon (France), May 1997, F. Nébavi, R. Le Guennec, **S. Arnavielhe**, H. Menan, K. Kakou, P. Combe, F. Aoussi, M. Mallié, M. Kone, J.-M. Bastide.
- Biodiversity of Atypical *Candida albicans* strains isolated from AIDS patients. ISHAM, Parme (Italy) June 1997, R. Le Guennec, **S. Arnavielhe**, M.Mallié, J.-M. Bastide.
- Subtyping of *Cryptococcus neoformans* by multilocus enzyme electrophoresis - preliminary results.RICAI, december 1996, Paris. P.Desmet, **S.Arnavielhe**, D.Swinne, M.Mallié, Ch.de Vroey, J.-M.Bastide.
- Etudes génétique et épidemiologique de diverses souches de *Cryptococcus neoformans*. RICAI Paris (France) decembre 1997, S. Bertout, F. Renaud, M. Mallié, **S. Arnavielhe**, P.Desmet, D. Swinne, J.-M. Bastide.
- Polymorphisme genetique de *Cryptococcus neoformans* par MLEE. French Society of Parasitology. Montpellier (France), February 1999. S. Bertout, F. Renaud, M. Mallié, **S. Arnavielhe**, P.Desmet, D. Swinne and J.-M. Bastide
- Motor Proteins Function for Mitotic Division in the Fungus *Nectria haematococca*. Gordon Research conferences Boston(USA) July 1998. S. Inoue, T. Sandrock, **S. Arnavielhe**, O.C. Yoder, B.G. Turgeon and J.R. Aist.
- Large-Scale Genome Diversity Sequencing Project. Microbial Genomes Conference IV, Chantilly (VA) February 2000, **S.M. Rodriguez Arnavielhe**, D.A. Robinson, M.E. Golden, E. Chen, C.-N. Chen, S. Peterson, E. J. Lefkowitz, J. Glass and. S.K. Hollingshead.
- Large-Scale Genome Diversity Sequencing Project. International Symposium on Pneumococci and Pneumococcal Diseases (ISPPD) Sun City (South Africa) March 2000. S.K. Hollingshead, D.A. Robinson, M.E. Golden, E. Chen, C.-N. Chen, S. Peterson, E. J. Lefkowitz, J. Glass **and S.M. Rodriguez**.
- Diversity and Mosaic Organization of the Aro genes in the Shikimate Pathway of *Streptococcus pneumoniae*. American Society of Microbiology (ASM). Los Angeles (USA) May 2000. **S.M. Rodriguez**, D.A. Robinson and S.K. Hollingshead.