

Bioinformatician (PhD in Biochemistry)

Laurent J. E. FALQUET

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Education:

Since 2002:	Bioinformatician, Swiss EMBnet node manager at SIB-Lausanne
2000 - 2002:	Bioinformatician, Scientific collaborator at SIB-Lausanne
1998 - 1999:	Post doctoral training in bioinformatics, SIB-Lausanne
1993 - 1997:	PhD thesis in biochemistry, university of Geneva
1992:	Master in molecular biology, university of Geneva
1991:	Diploma in biochemistry, university of Geneva (work at the Biozentrum/Basel)
1990:	Licence in biochemistry, university of Geneva
1985:	Undergraduate, Calvin's college, Geneva

Languages:

French:	mother tongue
English:	fluent
German:	learned at school
Spanish:	beginner

Other interests:

Associations:	<ul style="list-style-type: none">• Member of the Swiss Society for Experimental Biological Sciences (USGEB) (Biochemistry section)• Member of the «Comité romand against genetic prohibition» (Génie génétique, un don de la nature)
Music:	<ul style="list-style-type: none">• Clarinet since 1978, member of a band since 1980, secretary 1990-1993, manager of the school of music 1993-1997 (Fanfare municipale de Collonge-Bellerive), member of l'Harmonie Municipale d'Epalinges since 1998, president since May 2000 (http://www.harmonie-epalinges.ch).
Sports:	<ul style="list-style-type: none">• Jumping (regional level) 1979-1992. Badminton. Golf since 1998 (HCP 31).
Informatic:	<ul style="list-style-type: none">• PASCAL and assembly language learned at college, 1981-1985.• Java programming at «Les cours industriels du soir» (30 hours), 1997.
Teaching:	<ul style="list-style-type: none">• CAP (Computer Assisted Publication) teacher on Macintosh and PC computers (Maison des Jeunes et de la Culture de St-Gervais/GE) 1989-1991.• 2 months laboratory monitoring of students in medicine (1st year) 1989.• 2 months laboratory monitoring of students in biology (2nd year) 1992.• 3x 1 month exercises monitoring of students in medicine (2nd year) 1994-1996.• Teacher at the first academic InterPro workshop at EBI, June 2001.• Teaching and monitoring of several EMBnet bioinformatics courses, 1998-2004.• Assistant (teaching and monitoring) for the Master degree in Bioinformatics (joint degree of University of Geneva and University of Lausanne), 2000-2004.• Responsible for the Perl/Unix module of the Master degree in Genomics (Lausanne University), 2005.

Current employment: **Swiss Institute of Bioinformatics, Lausanne.**

Group management: Since June 2002 I received the responsibility of the Swiss EMBnet node management. I have currently 2 collaborators in my group:

- Dr Vassilios Ioannidis (course organiser and helpdesk in Lausanne&Geneva) (50%)
- Dr Lorenza Bordoli (course organiser and helpdesk in Basel) (50%)

Web and services: Since March 1998, I am the webmaster for the swiss EMBnet node (<http://www.ch.embnet.org>) and, since January 1999, for the «3ème Cycle Romand en Sciences Biologiques» (<http://www.3eme-cycle.ch/biologie>). I practice HTML, Javascript, Perl, MySQL, PHP and other Unix tools in my daily work.

Helpdesk: Helping lab researchers with their problems is one of my major task.

Teaching: I am responsible for the organisation of the EMBnet bioinformatics courses:

- EMBnet sequence analysis for beginners, September 1998 3rd edition, 1 week
- EMBnet 3D protein structure, March 1999, 1 week
- EMBnet sequence analysis for beginners, September 1999 4th edition, 1 week
- Sequence analysis for beginners, October 1999, 1 week, Cali, Colombia
- EMBnet Advanced sequence analysis, March 2000, 1 week
- EMBnet sequence analysis for beginners, September 2000 5th edition, 1 week
- Sequence analysis for beginners, November 2000, 1 week, Bogota, Colombia
- EMBnet DNA Microarrays joint course, March 2001 1st edition, 1 week
- EMBnet Introduction to Bioinformatics, September 2001 1st edition, 1 week
- Advanced Sequence analysis and DNA Microarrays course, November 2001, 1 week, Bogota, Colombia
- EMBnet DNA Microarrays joint course, March 2002 2nd edition, 1 week
- EMBnet Introduction to Bioinformatics, September 2002 2nd edition, 1 week.
- Introduction to Bioinformatics, November 2002, 1 week, Bogota, Colombia
- EMBnet Introduction to Bioinformatics, March 2003 3rd edition, 1 week.
- EMBnet Phylogeny with bioinformatics tools, September 2003, 1 week.
- EMBnet Introduction to Bioinformatics, October 2003 4th edition, 1 week.
- EMBnet Proteomics with bioinformatics tools, March 2004, 1 week.
- EMBnet Introduction to Bioinformatics, September 2004 5th edition, 1 week.
- EMBnet 3D protein structure, October 2004, 1 week
- EMBnet Introduction to Bioinformatics, October 2004 6th edition, 1 week.

Master project director :

- Viviane Praz (2000): «Transformation of the EPD database in XML format»
- Volker Flegel (2001): «Development of a format converter: PROSITE profile to PSI-Blast checkpoint»
- Prof. Emiliano Barreto & Mr. Diego Riaño (2002): «Creation of a MySQL database for PROSITE»
- Daniel Matute (2003): «Hunting for Insect specific protein domains»
- Maciek Rückgraber (2004): «Creation of a MSA annotation tool»

Master co-director :

- Dr. Vassilios Ioannidis (2002): «MyHits: the migration to a relational database to handle redundancy and allow user data integration»
- Michael Muller (2004): «Creation of a query database for the MyHits web server»

European projects:

EMBnet

Member (treasurer) of the Publications&Public Relations program committee of the EMBnet organisation, responsible for the edition of the EMBnet.news quarterly online newsletter, and webmaster of the web site of the organisation (<http://www.embnet.org>). I also managed the edition of 8 new Quick Guides.

EMBRACE

Participant for Switzerland of the FP6 European grant EMBRACE (beginning 2005).

Training:

Diploma 4th year training (1 month): Prof. U. Schibler, Dept of Molecular Biology, Univ. of Geneva

I tried to clone a transcription factor of rat liver by screening of a λ gt11 library.

Diploma 4th year training (1 month): Prof. U. Laemmli, Dept of Biochemistry, Univ. of Geneva

I studied histone H1, its cooperative binding to DNA by filter binding and precipitation, as well as, its DNA interaction domain by tryptic digestion.

Diploma work (7 months): Prof. E. Kellenberger, Dept of Microbiology, Biocenter, Univ. of Basel

I purified E. coli HU protein and studied its interaction with DNA, the influence of the molar ratio of HU:DNA on the aggregation by cross-linking agents and comparison with in vitro reconstituted chromatin. Visualization of the binding of HU to DNA by electron microscopy either in absence or in presence of other proteins (RNA polymerase, topoisomerase I).

A copy of the work is available for consultation.

Master work (1 year): Prof. U. Laemmli, Dept of Molecular Biology, Univ. of Geneva

I studied yeast *S. cerevisiae* topoisomerase II to identify the putative domains involved in its cooperative binding to DNA and in chromosome condensation. Expression and purification of the protein. I used cross-linking agents to demonstrate an interaction between the homodimers and proteolytic digestion (SV8; papain; trypsin) to study the effect on its enzymatic activity and on its cooperative binding to DNA. I labelled the protein by phosphorylation using casein kinase II and radioactive ATP. I tried to purify digestion fragments by column chromatography and glycerol gradients.

A copy of the work is available for consultation.

PhD thesis (4 years): Prof. J.-C. Jaton, Dept of Medical Biochemistry, Univ. of Geneva

I studied the human ubiquitin specific Isopeptidase-T. I purified the protein from human red blood cells by ion exchange and affinity chromatography, digested it by Lys-C and internal sequences were obtained. The sequences were used to design degenerated primers to clone the cDNA by RT-PCR on human mRNA. I sequenced the cDNA and revealed that the protein is a member of a growing family of deubiquitinases (or ubiquitin C-terminal hydrolases family 2). I used the protein to successfully raise an anti-serum in rabbit. I studied the enzymatic activity in vitro and revealed a dual ubiquitin specific activity on either «linear» or «branched» substrates, as well as an inhibition by ubiquitin derived peptides. Further studies, allowed me by the expression of the recombinant protein in E. coli, to reveal that the protein is a Zn metallo-protease binding at least one Zn atom of high affinity and being inhibited by increasing Zn concentrations.

A copy of the work is available for consultation.

Database management and profile design (2 years): Dr. Ph. Bucher, SIB-ISREC, Lausanne

From January 2000 to September 2002, I worked part time for Dr. Philipp Bucher (SIB-ISREC) on the maintenance and enhancement of the PROSITE profile database. Creating new protein profiles, updating old profiles and collaboration in the documentation production with 2 annotators located in Geneva.

Post-graduate courses:

1993: Vaccinia virus as expression system, Prof. R. Wittek (1 week);

1994: 2D-PAGE and microtechnics in protein chemistry, Prof. J.-C. Jaton (1 week);

1997: Sequence analysis EMBnet course, Dr. P. Bucher & V. Jongeneel (1 week);

1998: AceDB and gene prediction, EMBnet course, Dr. P. Bucher & V. Jongeneel (1 week);

1999: Protein Domain Workshop, EBI-Sanger, Hinxton (UK), (3 days);

2002: Statistics crash course, EPFL, Lausanne (3 days);

List of Publications

- 2005 Beckmann, J S, Maurer, F, Delorenzi, M and **Falquet, L.** (2005)
On ubiquitin ligases and cancer
Human Mutations in press
- Köffel R, Tiwari R, **Falquet L**, Schneiter R. (2005)
YLL012/YEH1, YLR020/YEH2 and TGL1, define a novel family of membrane-anchored lipases that are required for steryl ester hydrolysis in yeast.
Mol Cell Biol in press
- 2004 de Fourmestraux V, Neubauer H, Poussin C, Farmer P, **Falquet L**, Burcelin R, Delorenzi M, Thorens B. (2004)
Transcript profiling suggests that differential metabolic adaptation of mice to a high fat diet is associated with changes in liver to muscle lipid fluxes.
J Biol Chem. Dec 3;279(49):50743-53.
- Beckmann J S, Maurer F, Delorenzi M and **Falquet L.** (2004)
Ubiquitin ligases as cancer genes
Nature Reviews Cancer Published online: 1 August 2004 doi:10.1038/nrc1299-c1
http://www.nature.com/nrc/journal/v4/n3/corres/nrc1299_fs.html
- Pagni M, Ioannidis V, Cerutti L, Zahn-Zabal M, Jongeneel CV, **Falquet L.** (2004)
MyHits: a new interactive resource for protein annotation and domain identification.
Nucleic Acids Res. Jul 1;32(Web Server issue):W332-5.
- 2003 **Falquet L**, Bordoli L, Ioannidis V, Pagni M, Jongeneel CV. (2003)
Swiss EMBnet node web server.
Nucleic Acids Res. Jul 1;31(13):3782-3.
- Mulder NJ, Apweiler R, Attwood TK, Bairoch A, Barrell D, Bateman A, Binns D, Biswas M, Bradley P, Bork P, Bucher P, Copley RR, Courcelle E, Das U, Durbin R, **Falquet L**, Fleischmann W, Griffiths-Jones S, Haft D, Harte N, Hulo N, Kahn D, Kanapin A, Krestyaninova M, Lopez R, Letunic I, Lonsdale D, Silventoinen V, Orchard SE, Pagni M, Peyruc D, Ponting CP, Selengut JD, Servant F, Sigrist CJ, Vaughan R, Zdobnov EM. (2003)
The InterPro Database, 2003 brings increased coverage and new features.
Nucleic Acids Res. Jan 1;31(1):315-8.
- 2002 Sigrist CJ, Cerutti L, Hulo N, Gattiker A, **Falquet L**, Pagni M, Bairoch A, Bucher P. (2002)
PROSITE: a documented database using patterns and profiles as motif descriptors.
Brief Bioinform. Sep;3(3):265-74.
- Mulder NJ, Apweiler R, Attwood TK, Bairoch A, Bateman A, Binns D, Biswas M, Bradley P, Bork P, Bucher P, Copley R, Courcelle E, Durbin R, **Falquet L**, Fleischmann W, Gouzy J, Griffith-Jones S, Haft D, Hermjakob H, Hulo N, Kahn D, Kanapin A, Krestyaninova M, Lopez R, Letunic I, Orchard S, Pagni M, Peyruc D, Ponting CP, Servant F, Sigrist CJ. (2002)
InterPro: an integrated documentation resource for protein families, domains and functional sites.
Brief Bioinform. Sep;3(3):225-35.
- Falquet L**, Pagni M, Bucher P, Hulo N, Sigrist C J A, Hofmann K, Bairoch A. (2002)
The PROSITE database, its status in 2002
Nucleic Acids Res. 30, 235-238.
- 2001 Hofmann K, **Falquet L.** (2001)
A conserved ubiquitin interacting motif in multiple components of proteasomal and lysosomal protein degradation systems.
Trends Biochem Sci. 26(6), 347-50

Pagni M, Iseli C, Junier T, **Falquet L**, Jongeneel V, Bucher P. (2001)
trEST, trGEN and hits: access to databases of predicted protein sequences.
Nucleic Acids Res. 29, 148-151

Apweiler R, Attwood TK, Bairoch A, Bateman A, Birney E, Biswas M, Bucher P, Cerutti L, Corpet F, Croning MD, Durbin R, **Falquet L**, Fleischmann W, Gouzy J, Hermjakob H, Hulo N, Jonassen I, Kahn D, Kanapin A, Karavidopoulou Y, Lopez R, Marx B, Mulder NJ, Oinn TM, Pagni M, Servant F. (2001)

The InterPro database, an integrated documentation resource for protein families, domains and functional sites.

Nucleic Acids Res. 29, 37-40

2000 Apweiler R, Attwood TK, Bairoch A, Bateman A, Birney E, Biswas M, Bucher P, Cerutti L, Corpet F, Croning MD, Durbin R, **Falquet L**, Fleischmann W, Gouzy J, Hermjakob H, Hulo N, Jonassen I, Kahn D, Kanapin A, Karavidopoulou Y, Lopez R, Marx B, Mulder NJ, Oinn TM, Pagni M, Servant F, Sigrist CJ, Zdobnov EM. (2000)

InterPro -an integrated documentation resource for protein families, domains and functional sites.

Bioinformatics 16(12), 1145-1150

1999 Hofmann K, Bucher P, **Falquet L**, Bairoch A. (1999)

The PROSITE database, its status in 1999.

Nucleic Acids Res. 27, 215-219

1995 **Falquet L**, Paquet N, Frutiger S, Hughes GJ, Hoang-Van K, Jatton JC. (1995)

cDNA cloning of a human 100 kDa de-ubiquitinating enzyme: the 100 kDa human de-ubiquitinase belongs to the ubiquitin C-terminal hydrolase family 2 (UCH2).

FEBS Lett. 376, 233-237

Falquet L, Paquet N, Frutiger S, Hughes GJ, Hoang-Van K, Jatton JC. (1995)

A human de-ubiquitinating enzyme with both isopeptidase and peptidase activities in vitro.

FEBS Lett. 359, 73-77

Posters

2001 Manno (Switzerland), September 2001:
CSCS Users day
«BLAST similarity searches in biological databases»

1997 Saxton's River (USA), June 1997:
FASEB Meeting «Ubiquitin pathway and protein degradation»
«Two human deubiquitinases isopeptidase-T isoforms bind zinc with different stoichiometry»

1995 Saxton's River (USA), June 1995:
FASEB Meeting «Ubiquitin pathway and protein degradation»
«Characterization of a human 100 kDa de-ubiquitinase: a novel member of the ubiquitin C-terminal hydrolase family 2»

1994 Siena (Italy), September 1994:
Meeting «2D Electrophoresis: from Proteins Maps to Genomes»
«2D-PAGE Immunolocalization of a Putative Human Isopeptidase»

References

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