

INFORMAZIONI PERSONALI

Moreno Galleni



Born [REDACTED]

[Scarica questo curriculum vitae](#)

Moreno Galleni is a full professor at the Faculty of Sciences of the University of Liege (ULiege) since January 1st 2001. He is responsible of the laboratory of Biomacromolecular Chemistry laboratory of the Center for Protein Engineering. The major research themes are the studies of the bacterial resistance mechanism toward beta-lactam antibiotics, the structural studies of House dust mite allergens displaying a protease activity. Recently, the group was also involved in the studies of the interaction between lncRNA and de novo design-RNA binding proteins. He is also directly involved in the development of two technological platforms dedicated to protein expression and purification (Protein Factory) and high through put techniques for the characterization of protein-ligand interactions.

Moreno Galleni published 183 articles in international and peer-reviewed journals. He supervised 20 PhD thesis and he is currently supervising 4 PhD students. He is co-author of three patents and two of them led to license agreement with two biotechnological SMEs. His citation index is 6677 and his h factor is 44.

The three main scientific achievements were obtained:

1) Our group dedicated major efforts to the biochemical and structural characterization of the emerging β -lactamases, namely the class B and class A carbapenemases. We are also implicated in the selection of new non β -lactam compounds that could be lead to the new generation of antibiotics. We were also implicated in the first extensive characterization of class C β -lactamases.

2) We unraveled the molecular mechanism of activation cascade for digestive protease in the gut of *Dermatophagoides pteronyssinus* (house dust mite) leading to one of the major allergens for humans.

3) A part of our research was dedicated to the engineering of class A β -lactamases as protein carrier of peptides or protein domains. The newly synthesized protein behave as a difunctional proteins and can be used in the development of new biosensor devices, of antibodies and for the production of peptides or soluble domains of membrane proteins. In our new procedure, the sequence of the peptide or protein domains are not fused on the N- or C-terminal end of the proteins but inserted into the protein structure. This procedure reduced the non specific protease digestion of the hybrid protein.

Since 2000, I am teaching "Basic thermodynamic applied to the biological sciences and General Biochemistry (6 ECTS)" to Bachelor student in biological sciences. I also develop a new course in "Biomolecular Chemistry (7 ECTS)" to Bachelor student in biological sciences and the course of "protein chemistry (4 ECTS)" for Master students in Chemistry. I also, with Dr Wilmotte A and Feller G, create a new course on extremophile organisms for Master students of Biochemistry, Molecular and Cellular biology. We are also involved in a Erasmus exchange program for teachers between ULiege and the Università degli Studi di Siena. Finally, we are implicated in a Long Life teaching program on the topics of "Protein expression systems and Protein Purification".

For the period (2013-2017), our laboratory is involved in several research networks:

- European funding. FP7- ENABLE (2014-2020): project in the frame of the IMI program and dedicated to the identification of new antibiotics

We are also involved into two projects financed by the FEDER program. This program started in september 2017 and for a period of 4 years. The conventions are still under validation. The name of the two program are BIODEC and PROSTEM. They aim to develop new bioactivated structure that help for the clearance of OVCs (Organic Volatile Compounds) (BIODEC project) or the tissular engineering (project

OCCUPAZIONE PER LA QUALE
SI CONCORRE
POSIZIONE RICOPERTA
OCCUPAZIONE DESIDERATA
TITOLO DI STUDIO
DICHIARAZIONI PERSONALI

PROSTEM)

- FNRS. FRFC-T.0206.13 -PDR (2013- 2017). Analysis of metal hyperaccumulation and hypertolerance in *Arabidopsis halleri*: from population to protein
- Belspo. IAP P7/44 (2012-2017). Member of the netwrok Integrative Peotein Science: from small molecules to complex biological systems
- SPW (Regional funding). DG06-816873 (2009-2013). GPCR-like. Development of GPCR-like protein for the development of allosteric modulators
- DGA D31-1253. (2011-2013) Development of a new technology to produce lactose depleted milk
- DGA D31-1281. (2012-2014). Detection of *Staphylococcus aureus* involved in bovine mastisis
- MECATECH 6956. (2012-2017). LEGOMEDIC. Development of new microfluidic device for the purification of proteins
- WBHEALTH MYCAVERT. (2014-2016). Development of a new antifungi agent fro the treatment of dermatophytosis.
- WBHEALTH HOMECELLS (2014-2017). New bioactivated support for the regenerative medecine
- The Centre for Protein Engineering is involved in two license agreements with companies. We are also in a collaboration program with Damhert SA and with Biosourcing SA.
- Since October 2015, I am the Vice-Dean for Research of the Faculty of Sciences ULiege. I am involved in the three research councils of ULiege. I act also as external reviewer for the SPF-Health and different funding national agencies (ANR, SFI). I also participate to the reviewing of manuscript for several international and peer reviewed journal such as Allergy, Antimicrob. Agents Chemother., Journal of Antimicrob. Chemother and Biochemistry.

Lingua madre French

Altre lingue	COMPRENSIONE		PARLATO		PRODUZIONE SCRITTA
	Ascolto	Lettura	Interazione	Produzione orale	
English	C2	C2	C2	C2	C2
Italian	B2	B1	B1	B1	A2

Livelli: A1/A2: Utente base - B1/B2: Utente intermedio - C1/C2: Utente avanzato
Quadro Comune Europeo di Riferimento delle Lingue

LIST OF PUBLICATIONS

- 1) Bottoni, C., Perilli, M., Marcoccia, F., Piccirilli, A., Pellegrini, C., Colapietro, M., Sabatini, A., Celenza, G., Kerff, F., Amicosante, G., Galleni, M., Mercuri, P.S.
Kinetic studies on CphA mutants reveal the role of the P158-P172 loop in activity versus carbapenems (2016) *Antimicrobial Agents and Chemotherapy*, 60 (5), pp. 3123-3126.
- 2) Marcoccia, F., Bottoni, C., Sabatini, A., Colapietro, M., Mercuri, P.S., Galleni, M., Kerff, F., Matagne, A., Celenza, G., Amicosante, G., Perilli, M.

Kinetic study of laboratory mutants of NDM-1 metallo- β -lactamase and the importance of an isoleucine at position 35, (2016) Antimicrobial Agents and Chemotherapy, 60 (4), pp. 2366-2372

3) Fernea, A., Galleni, M., Frère, J.-M.

Kinetics of the interaction between BAL29880 and lk157 and the class C β -lactamase CHE-1 (2016) Antimicrobial Agents and Chemotherapy, 60 (3), pp. 1747-1750.

4) Laurent, C., Lekeux, G., Ukuwela, A.A., Xiao, Z., Charlier, J.-B., Bosman, B., Carnol, M., Motte, P., Damblon, C., Galleni, M., Hanikenne, M.

Metal binding to the N-terminal cytoplasmic domain of the P $<\inf>$ IB $</\inf>$ ATPase HMA4 is required for metal transport in Arabidopsis (2016) Plant Molecular Biology, 90 (4-5), pp. 453-466.

5) Ghiglione, B., Rodríguez, M.M., Herman, R., Curto, L., Dropa, M., Bouillenne, F., Kerff, F., Galleni, M., Charlier, P., Gutkind, G., Sauvage, E., Power, P.

Structural and Kinetic Insights into the "Ceftazidimase" Behavior of the Extended-Spectrum β -Lactamase CTX-M-96 (2015) Biochemistry, 54 (32), pp. 5072-5082.

6) Bouaziz, A., Walgraffe, D., Bouillot, C., Herman, J., Foguenne, J., Gothon, A., Louis, R., Hentges, F., Jacquet, A., Mailleux, A.-C., Chevigné, A., Galleni, M., Adam, E., Dumez, M.E.

Development of recombinant stable house dust mite allergen Der p 3 molecules for component-resolved diagnosis and specific immunotherapy (2015) Clinical and Experimental Allergy, 45 (4), pp. 823-834.

7) Fernea, A., Galleni, M., Frère, J.-M.

Kinetics of the interaction between avibactam and the CHE-1 class C β -lactamase (2015) Journal of Antimicrobial Chemotherapy, 70 (3), art. no. dku442, pp. 951-953.

8) Crasson, O., Rhazi, N., Jacquin, O., Freichels, A., Jérôme, C., Ruth, N., Galleni, M., Filée, P., Vandevenne, M. Enzymatic functionalization of a nanobody using protein insertion technology (2015) Protein Engineering, Design and Selection, 28 (10), pp. 451-460.

9) Van Der Heiden, E., Delmarcelle, M., Simon, P., Counson, M., Galleni, M., Freedberg, D.I., Thompson, J., Joris, B., Battistel, M.D.

Synthesis and Physicochemical Characterization of D-Tagatose-1-Phosphate: The Substrate of the Tagatose-1-Phosphate Kinase in the Phosphotransferase System-Mediated D-Tagatose Catabolic Pathway of *Bacillus licheniformis* (2015) Journal of Molecular Microbiology and Biotechnology, 25 (2-3), pp. 106-119.

10) Pujol, J., Bouillenne, F., Farnir, F., Dufrasne, I., Mainil, J., Galleni, M., Lekeux, P., Bureau, F., Fiévez, L.

Generation of a soluble recombinant trimeric form of bovine CD40L and its potential use as a vaccine adjuvant in cows (2015) Veterinary Immunology and Immunopathology, 168 (1-2), pp. 1-13.

11) Pérez-Llarena, F.J., Zamorano, L., Kerff, F., Beceiro, A., García, P., Miró, E., Larrosa, N., Gómez-Bertomeu, F., Méndez, J.A., González-López, J.J., Oliver, A., Galleni, M., Navarro, F., Bou, G. Genetic and kinetic characterization of the novel AmpC β -lactamases DHA-6 and DHA-7 (2014) Antimicrobial Agents and Chemotherapy, 58 (11), pp. 6544-6549.

12) Ruggiero, M., Kerff, F., Herman, R., Sapunaric, F., Galleni, M., Gutkind, G., Charlier, P., Sauvage, E.,

Power, P.

Crystal structure of the extended-spectrum β -lactamase PER-2 and insights into the role of specific residues in the interaction with β -lactams and β -lactamase inhibitors (2014) *Antimicrobial Agents and Chemotherapy*, 58 (10), pp. 5994-6002. DOI: 10.1128/AAC.00089-14

13) Herman, J., Thelen, N., Smargiasso, N., Mailleux, A.-C., Luxen, A., Cloes, M., De Pauw, E., Chevigné, A., Galleni, M., Dumez, M.-E.

Der p 1 is the primary activator of der p 3, der p 6 and der p 9 the proteolytic allergens produced by the house dust mite Dermatophagoides pteronyssinus (2014) *Biochimica et Biophysica Acta - General Subjects*, 1840 (3), pp. 1117-1124. DOI:10.1016/j.bbagen.2013.11.017

14) Ben Achour, N., Belhadj, O., Galleni, M., Ben Moussa, M., Mercuri, P.S.

Study of a natural mutant SHV-type β -lactamase, SHV-104, from Klebsiella pneumoniae (2014) *International Journal of Microbiology*, 2014, art. no. 548656, . DOI: 10.1155/2014/548656

15) Dumez, M.-E., Herman, J., Campizi, V., Galleni, M., Jacquet, A., Chevigné, A.

Orchestration of an uncommon maturation cascade of the house dust mite protease allergen quartet (2014) *Frontiers in Immunology*, 5 (MAR), art. no. Article 138,

16) Pérez, A., Pérez-Llarena, F.J., García, P., Kerff, F., Beceiro, A., Galleni, M., Bou, G.

New mutations in ADC-type b-lactamases from Acinetobacter spp. affect cefoxitin and ceftazidime hydrolysis (2014) *Journal of Antimicrobial Chemotherapy*, 69 (9), art. no. dku163, pp. 2407-2411.

17) Huynen, C., Filée, P., Matagne, A., Galleni, M., Dumoulin, M.

Class A β -Lactamases as Versatile Scaffolds to Create Hybrid Enzymes: Applications from Basic Research to Medicine (2013) *BioMed Research International*, 2013, art. no. 827621, .

18) Dumez, M.-E., Herman, J., Campisi, V., Bouaziz, A., Rosu, F., Luxen, A., Vandenberghe, I., de Pauw, E., Frère, J.-M., Matagne, A., Chevigné, A., Galleni, M.

The Proline-Rich Motif of the proDer p 3 Allergen Propeptide Is Crucial for Protease-Protease Interaction (2013) *PLoS ONE*, 8 (9), art. no. e68014, .

19) Delsaute, M., Berlemont, R., Dehareng, D., Van Elder, D., Galleni, M., Bauvois, C.

Three-dimensional structure of RBcel1, a metagenome-derived psychrotolerant family GH5 endoglucanase (2013) *Acta Crystallographica Section F: Structural Biology and Crystallization Communications*, 69 (8), pp. 828-833.

20) Van Der Heiden, E., Delmarcelle, M., Lebrun, S., Freichels, R., Brans, A., Vastenavond, C.M., Galleni, M., Joris, B.

A pathway closely related to the D-tagatose pathway of gram-negative enterobacteria identified in the gram-positive bacterium *Bacillus licheniformis* (2013) *Applied and Environmental Microbiology*, 79 (11), pp. 3511-3515.

21) Berlemont, R., Spee, O., Delsaute, M., Lara, Y., Schuldes, J., Simon, C., Power, P., Daniel, R., Galleni, M.

Novel organic solvent-tolerant esterase isolated by metagenomics: Insights into the lipase/esterase classification [Nueva esterasa tolerante a los solventes orgánicos aislada por metagenómica: ideas sobre la clasificación de las esterasas/lipasas] (2013) *Revista Argentina de Microbiología*, 45 (1), pp. 3-12.

- 22) Sohier, J.S., Laurent, C., Chevigné, A., Pardon, E., Srinivasan, V., Wernery, U., Lassaux, P., Steyaert, J., Galleni, M.
Allosteric inhibition of VIM metallo- β -lactamases by a camelid nanobody (2013) Biochemical Journal, 450 (3), pp. 477-486.
- 23) Perilli, M., Celenza, G., Mercuri, P.S., Galleni, M., Pellegrini, C., Segatore, B., Amicosante, G. R164H and V240H replacements by site-directed mutagenesis of TEM-149 extended-spectrum β -Lactamase: Kinetic analysis of TEM-149H240 and TEM-149H164-H240 laboratory mutants (2013) Antimicrobial Agents and Chemotherapy, 57 (2), pp. 1047-1049.
- 24) Berlemont, R., Jacquin, O., Delsaute, M., La Salla, M., Georis, J., Verté, F., Galleni, M., Power, P. Novel cold-adapted esterase MHlip from an Antarctic soil metagenome (2013) Biology, 2 (1), pp. 177-188.
- 25) Delbrück, H., Bogaerts, P., Kupper, M.B., De Castro, R.R., Bennink, S., Glupczynski, Y., Galleni, M., Hoffmann, K.M., Bebrone, C. Kinetic and crystallographic studies of extended-spectrum GES-11, GES-12, and GES-14 β -lactamases (2012) Antimicrobial Agents and Chemotherapy, 56 (11), pp. 5618-5625
- 26) Baldo, A., Chevigné, A., Dumez, M.-E., Mathy, A., Power, P., Tabart, J., Cambier, L., Galleni, M., Mignon, B. Inhibition of the keratinolytic subtilisin protease Sub3 from Microsporum canis by its propeptide (proSub3) and evaluation of the capacity of proSub3 to inhibit fungal adherence to feline epidermis (2012) Veterinary Microbiology, 159 (3-4), pp. 479-484.
- 27) Power, P., Mercuri, P., Herman, R., Kerff, F., Gutkind, G., Dive, G., Galleni, M., Charlier, P., Sauvage, E. Novel fragments of clavulanate observed in the structure of the class A β -lactamase from Bacillus licheniformis BS3 (2012) Journal of Antimicrobial Chemotherapy, 67 (10), art. no. dks231, pp. 2379-2387.
- 28) Moineaux, L., Laurent, S., Reniers, J., Dolušić, E., Galleni, M., Frère, J.-M., Masereel, B., Frédéric, R., Wouters, J. Synthesis, crystal structures and electronic properties of isomers of chloro-pyridinylvinyl-1H-indoles (2012) European Journal of Medicinal Chemistry, 54, pp. 95-102.
- 29) Scarafone, N., Pain, C., Fratamico, A., Gaspard, G., Yilmaz, N., Filée, P., Galleni, M., Matagne, A., Dumoulin, M. Amyloid-like fibril formation by polyq proteins: A critical balance between the polyq length and the constraints imposed by the host protein (2012) PLoS ONE, 7 (3), art. no. e31253, .
- 30) Kupper, M., Bauvois, C., Frère, J.-M., Hoffmann, K., Galleni, M., Bebrone, C. The CphAII protein from Aquifex aeolicus exhibits a metal-dependent phosphodiesterase activity (2012) Extremophiles, 16 (1), pp. 45-55.
- 31) Berlemont, R., Galleni, M. Carbohydrate active enzymes derived from metagenomes: From microbial ecology to enzymology (2011) Metagenomics and its Applications in Agriculture, Biomedicine and Environmental Studies, pp. 185-209.

- 32) El Garch, F., Bogaerts, P., Bebrone, C., Galleni, M., Glupczynski, Y. OXA-198, an acquired carbapenem-hydrolyzing class D β -lactamase from *Pseudomonas aeruginosa* (2011) *Antimicrobial Agents and Chemotherapy*, 55 (10), pp. 4828-4833.
- 33) Pérez-Llarena, F.J., Kerff, F., Abián, O., Mallo, S., Fernández, M.C., Galleni, M., Sancho, J., Bou, G. Distant and new mutations in CTX-M-1 β -lactamase affect cefotaxime hydrolysis (2011) *Antimicrobial Agents and Chemotherapy*, 55 (9), pp. 4361-4368.
- 34) Vandevenne, M., Gaspard, G., Belgsir, E.M., Ramnath, M., Cenatiempo, Y., Marechal, D., Dumoulin, M., Frere, J.-M., Matagne, A., Galleni, M., Filee, P. Effects of monopropanediamino- α -cyclodextrin on the denaturation process of the hybrid protein BlaPChBD (2011) *Biochimica et Biophysica Acta - Proteins and Proteomics*, 1814 (9), pp. 1146-1153.
- 35) Yunus, S., Attout, A., Vanlancker, G., Bertrand, P., Ruth, N., Galleni, M. A method to probe electrochemically active material state in portable sensor applications (2011) *Sensors and Actuators, B: Chemical*, 156 (1), pp. 35-42.
- 36) Vandevenne, M., Campisi, V., Freichels, A., Gillard, C., Gaspard, G., Frère, J.-M., Galleni, M., Filée, P. Comparative functional analysis of the human macrophage chitotriosidase (2011) *Protein Science*, 20 (8), pp. 1451-1463.
- 37) Berlemont, R., Pipers, D., Delsaute, M., Angiono, F., Feller, G., Galleni, M., Power, P. Exploring the antarctic soil metagenome as a source of novel cold-adapted enzymes and genetic mobile elements [Explorando el metagenoma del suelo antártico como fuente de nuevas enzimas adaptadas al frío y elementos génicos móviles] (2011) *Revista Argentina de Microbiología*, 43 (2), pp. 94-103.
- 38) Dolušić, E., Larrieu, P., Blanc, S., Sapunaric, F., Pouyez, J., Moineaux, L., Colette, D., Stroobant, V., Pilote, L., Colau, D., Ferain, T., Fraser, G., Galleni, M., Frère, J.-M., Masereel, B., Van Den Eynde, B., Wouters, J., Frédérick, R. Discovery and preliminary SARs of keto-indoles as novel indoleamine 2,3-dioxygenase (IDO) inhibitors (2011) *European Journal of Medicinal Chemistry*, 46 (7), pp. 3058-3065.
- 39) Dolušić, E., Larrieu, P., Blanc, S., Sapunaric, F., Norberg, B., Moineaux, L., Colette, D., Stroobant, V., Pilote, L., Colau, D., Ferain, T., Fraser, G., Galleni, M., Frère, J.-M., Masereel, B., Eynde, B.V.D., Wouters, J., Frédérick, R. Erratum: Indol-2-yl ethanones as novel indoleamine 2,3-dioxygenase (IDO) inhibitors (Bioorganic and Medicinal Chemistry (2011) (1550-1561) (2011) *Bioorganic and Medicinal Chemistry*, 19 (9), p. 3029.
- 40) Horsfall, L.E., Izougarhane, Y., Lassaux, P., Selevsek, N., Liénard, B.M.R., Poirel, L., Kupper, M.B., Hoffmann, K.M., Frère, J.-M., Galleni, M., Bebrone, C. Broad antibiotic resistance profile of the subclass B3 metallo- β -lactamase GOB-1, a di-zinc enzyme (2011) *FEBS Journal*, 278 (8), pp. 1252-1263.
- 41) Lassaux, P., Traoré, D.A.K., Loisel, E., Favier, A., Docquier, J.-D., Sohier, J.S., Laurent, C., Bebrone, C., Frère, J.-M., Ferrer, J.-L., Galleni, M. Biochemical and structural characterization of the subclass B1 metallo- β -lactamase VIM-4 (2011) *Antimicrobial Agents and Chemotherapy*, 55 (3), pp. 1248-1255.

42) Vercheval, L., Bauvois, C., Di Paolo, A., Borel, F., Ferrer, J.-L., Sauvage, E., Matagne, A., Frère, J.-M., Charlier, P., Galleni, M., Kerff, F.

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43) Phichith, D., Bun, S., Padiolleau-Lefevre, S., Guellier, A., Banh, S., Galleni, M., Frere, J.-M., Thomas, D., Friboulet, A., Avalle, B.

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44) Chevigné, A., Dumez, M.-E., Dumoulin, M., Matagne, A., Jacquet, A., Galleni, M.

Comparative study of mature and zymogen mite cysteine protease stability and pH unfolding (2010) Biochimica et Biophysica Acta - General Subjects, 1800 (9), pp. 937-945

45) Geenen, V., Mottet, M., Dardenne, O., Kermani, H., Martens, H., Francois, J.-M., Galleni, M., Hober, D., Rahmouni, S., Moutschen, M.

Thymic self-antigens for the design of a negative/tolerogenic self-vaccination against type 1 diabetes (2010) Current Opinion in Pharmacology, 10 (4), pp. 461-472.

46) Lassaux, P., Hamel, M., Gulea, M., Delbrück, H., Mercuri, P.S., Horsfall, L., Dehareng, D., Kupper, M., Frère, J.-M., Hoffmann, K., Galleni, M., Bebrone, C.

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50) Rodríguez, M.M., Power, P., Sader, H., Galleni, M., Gutkind, G.

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- 56) Minond, D., Saldanha, S.A., Subramaniam, P., Spaargaren, M., Spicer, T., Fotsing, J.R., Weide, T., Fokin, V.V., Sharpless, K.B., Galleni, M., Bebrone, C., Lassaux, P., Hodder, P.
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Cefotaxime and ceftriaxone resistant Klebsiella pneumoniae associated with SHV-11 hyperproduction (2008) Annals of Microbiology, 58 (4), pp. 727-730.
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