



Marlène Durand, Ph.D.

Project manager (Bordeaux University Hospital/Inserm)

Research Engineer, BioTis (U1026)

Assistant Coordinator of Clinical Research Centre for Innovative Technologies in Biomaterial and Implantable Medical Devices (CIC-IT BioDiMI, www.cic-it-bordeaux.fr)

Bordeaux Consortium for Tissue Engineering (BxCRM).



Research Interests:

My interests have always been centered on innovation about health issues. My experience has been focused on making the proof of concept of new ideas and developments emerging from research units and clinicians' every day practice: going beyond the formal tests on the bench and with rodents and bringing innovation to patients' and/or market.

Bench to bedside and bedside to bench

My first research experience from 1997 to 2001 (Inserm U471 Inserm/INRA, Bordeaux University) focused on the study of the mechanisms of the genetic variability of the response to antidepressants: based on already well known discrepancies in antidepressants efficiency in human beings, I worked on a rodent model of emotional reactivity and studied the relationship between acute and chronic stress (at pre-natal and adult stages) and the mechanisms of the corticotropic axis on one hand, and the noradrenergic and serotonergic central systems on the other hand, in rats submitted to acute or chronic antidepressant or anxiolytic treatments. This integrative approach led to confirm the tight interactions between these components of the behavior and the answer to the antidepressant molecules. It increased the knowledge on the complexity of these mechanisms and highlighted different possible targets for improving patients' care.

Then I joined a team (CIC Inserm/Bordeaux University Hospital) (2002-2006) devoted to clinical evaluation of neurological strategies (i.e. Parkinson surgical treatment) and enlarged my knowledge of medical research working on clinical applications of new strategies in nutrition, cardiovascular and orthopaedics surgery and imaging. I set up of an ambitious clinical trial devoted to confirm French researchers' hypothesis that Asian and Caucasian populations do not metabolize the same way phytoestrogens taken from every day food or food supplements. In surgery, I set up clinical trials which aim were to demonstrate the safety and efficiency of new implantable medical devices or

combination of cell therapy and medical devices. In each case, the main challenge was to validate new knowledge obtained on the bench by scientists and translate it into a well-balanced clinical trial regarding participants's safety and scientific issues.

Medical devices (MD) proof of concept

For over 10 years, I have worked on the proof of concept of innovative implantable medical devices (MD) using my previous acquired know-how in experimental science and clinical research. As a manager of the Bordeaux CIC-IT, I conducted many studies at different level of the validation of new biomaterials and/or technologies in plenty medical fields: endocrinology with DDS, skin grafting, tissue engineering of digestive organs, orthopaedics (bone substitutes, osteosynthesis for spine and fracture healing), imaging, maxillo-facial surgery and cardio-vascular applications (vascular tissue engineering, stents, cardiac surgery follow up), etc. These projects were performed at different steps (*in vitro* or *in vivo* tests) to clinical trial, even post-market survey. The challenge is to realize them following required standards (ethics and market regulation) in order to obtain health authorities authorizations and CE marketing. A huge performance of the team I'm leading was to reach (and always improve) a high quality level in every day work to meet the patients' and authorities' needs. Moreover, it is mandatory for us to gather as much as possible researchers, clinicians and companies within a project in order to optimize the chance of the innovation to go the market, to the patient. The continuing link between the fundamental research in BIOTIS and CIC-IT, Bordeaux University Hospital and the economic environment of these teams is strength for this strategy of innovation validation.

Past and present Scientific activities

2012-	PhD director of Dr Luc (MD) working on tissue engineering of the esophagus (Bordeaux University)
2006-	Project Manager Clinical Research Centre and Innovative Technologies for Biomaterials (Bordeaux University Hospital/ Inserm) <i>In vitro and in vivo preclinical studies and pilot clinical studies</i>
⇒	In charge of the everyday management of a team of 10-15 people (secretary, technicians, engineers, post doc)
⇒	In charge of 76 projects since 2006, for validation of innovative biomaterials : compagnies, clinicians, and researchers networks, collaborations with institutions, studies specifications, protocol writing, studies coordination, quality insurance, and reports/publications writing
2002/2006	Project Manager/Clinical Research Assistant Clinical Research Centre (Bordeaux University Hospital/ INSERM) <i>Single and multi-centre clinical studies</i> Protocol design and writing, answers to funding calls, regulatory files writing and follow up, study organization and investigators' support, monitoring.
1997/2001	Experimental Research NeuroGenetic and Stress Laboratory INSERM U471-INRA (Institut François Magendie, Bordeaux University) Biochemistry, radio labelled binding, behavioral tests, statistical analyses

Keywords/expertise:

- Proof of concept
- Animal models
- Tissue-engineering
- Biomaterials
- Regenerative Medicine
- Histology
- Mechanical properties
- Biocompatibility
- Pre-clinical studies
- Clinical trials
- Translational medicine
- Technology transfer

Selected publications:

Nasal irrigation: From empiricism to evidence-based medicine. A review

P.-L. Bastier, A. Lechot, L. Bordenave, **M. Durand**, L. de Gabory.

Eur Ann Otorhinolaryngol Head Neck Dis. 2015 Nov;132(5):281-5.

Major post-operative complications predict long-term survival after esophagectomy in patients with adenocarcinoma of the esophagus

Luc G, **Durand M**, Chiche L, Collet D.

World J Surg 2015 Jan;39(1):216-22

Esophageal tissue engineering

G Luc, **M Durand**, D Collet, F Guillemot, L Bordenave

Expert Rev. Med. Devices 2014 ;11(2), 225–241

Interspecies differences with in vitro and in vivo models of vascular tissue engineering

M. Rémy, **M. Durand**, P. Menu, JC Voegel, JF Ponsot, X. Bérard, MF. Harmand, L. Bordenave

Biomaterials 34 (2013) 9842-9852

Bioceramic and Fibrin Sealant in High Tibial Valgus Osteotomy: Prospective Clinical Study

G Daculsi, JL Rouvillain, T Fabre, Y Catonné, M Bagot d'Arc, JM N'Guyen, **M Durand**

Key Engineering Materials 11/2013; 587:381-386.

A nano-hydroxyapatite - Pullulan/dextran polysaccharide composite macroporous material for bone tissue engineering.

Fricain JC, et al. **Durand M.**

Biomaterials. 2013 Apr;34(12):2947-59.

Development and clinical cases of injectable bone void filler used in orthopaedic

G. Daculsi, **M. Durand**, T. Fabre, F. Vogt, A.-P. Uzel, J.-L. Rouvillain

IRBM, 2012, volume 33: 253–261.

Bioavailability of glycitein relatively to other soy isoflavones in healthy young Caucasian men

Shinkaruk S, **Durand M**, Lamothe V, Carpaye A, Martinet A, Chantre P, Vergne S, Nogues X, Moore N, Bennetau-Pelissero C.

Food Chemistry, 2012, 135: 1104–1111

Injectable apatitic calcium phosphate cements and microporous biphasic calcium phosphate granules complex for bone repair

Daculsi G, LeGeros R, **Durand M**, Borget P, Baroth S, Goyenvalle E, Aguado E, Jegoux F.

J Austr Ceramic Society, 2010, 46[2] : 72-73.

Influence of ethnic origin (Asian vs.Caucasian) and background diet on the bioavaibility of dietary isoflavones.

Vergne S, Sauvant P, Lamothe V, Chantre P, Asselineau J, Pérez P, **Durand M**, Moore N, Bennetau-Pelissero C.

Brit J Nut 2009; Jul 22:1-12.

Higher bioavaibility of isoflavones after a single ingestion of a soya-based supplement than a soya-based food in young healthy males.

Vergne S, Bennetau-Pelissero C, Lamothe V, Chantre P, Potier M, Asselineau J, Pérez P, **Durand M**, Moore N, Sauvant P.

British Journal of Nutrition 2008; 99: 333-344.

TricOs™ and Fibrin Sealant Combined for Bone Defect Filling: From Pre-Clinical Tests to Prospective Clinical Study. Preliminary human data.

Durand M, Chauveaux D, Moinard M, Fabre T, Rouvillain JL, Bagot d'Arc M, Daculsi G.

Key Eng Mater 2008; 361-363:1335-1338.

Pilot study of safety and performance of a mixture of calcium phosphate granules combined with cellulosic-derived Gel after tunnel filling created during surgical treatment of femoral head aseptic osteonecrosis.

Fabre T, Chauveaux D, Moinard M, Mais C, **Durand M**, Pollart C, Daculsi G.

Key Eng Mater 2008; 361-363:1295-1298.

Bioavaibility and urinary excretion of isoflavones in humans: effects of soy-based supplements formulation and equol production.

Vergne S, Titier K, Bernard V, Asselineau J, **Durand M**, Lamothe V, Potier M, Pérez P, Demotes-Mainard J, Chantre P, Moore N, Bennetau-Pelissero C, Sauvant P.

J. Pharmaceu Biomed Analysis 2007; 43: 1488-1494.

Wistar Kyoto rats are sensitive to the hypolocomotor and anxiogenic effects of mCPP.

Durand M, Mormede P, Chaouloff F.

Behavioural Pharmacology 2003; 14: 173-177.

Strain-dependent neuro-chemical and neuroendocrine effects of desipramine, but not fluoxetine or imipramine, in Spontaneously hypertensive and Wistar-Kyoto rats

Durand M, Aguerre S, Fernandez F, Edno L, Combourieu I, Mormede P, Chaouloff F..

Neuropharmacology 2000 Sep; 39(12):2464-77.

Effects of repeated fluoxetine on anxiety-related behaviours, central serotonergic system and the corticotropic axis in SHR and WKY rats.

Durand M, Berton O, Aguerre S, Edno L, Combourieu I, Mormede P, Chaouloff F.

Neuropharmacology 1999 Jun; 38(6):893-907.

Behavioral, neuroendocrine and serotonergic consequences of single social defeat and repeated fluoxetine pretreatment in the Lewis rat strain.

Berton O, **Durand M**, Aguerre S, Mormede P, Chaouloff F.

Neuroscience 1999; 92(1):327-41.

Differential effects of neonatal handling on anxiety, corticosterone response to stress, and hippocampal glucocorticoid and serotonin (5-HT)2A receptors in Lewis rats.

Durand M, Sarrieau A, Aguerre S, Mormede P, Chaouloff F.

Psychoneuroendocrinol 1998 May; 23(4):323-35.

Anxiety- and activity-related effects of diazepam and chlordiazepoxide in the rat light/dark and dark/light tests. Chaouloff F, **Durand M**, Mormede P.

Behavioural Brain Research 1997 Apr; 85(1):27-35.

Teaching Activities:

Teaching activities	2013-	ADT from Doctoral School of Bordeaux University
	2006-	<i>Biomaterials and Medical Devices Master</i> (Bordeaux University)
	2006-	Member and/or examiner of Master and PhD degrees (Bordeaux University and Nancy University)
Other responsibilities	2016-	Expert for HCERES
	2014-	Member of the valorization committee of the Bordeaux Consortium of Regenerative Medicine
	2013-	Organizing board of RITS congress
	2010-	Editor assistant of the review on line « Bioceramics Development and Applications »
	2009-	Vice-president of the association « Association Aquitaine Biomateriaux et Implants » (2ACBI)

Funding:

Examples of projects about preclinical validation of innovative biomaterials in which I'm/was involved:

ANR GIP 2005 BIORIMP, ANR TECSAN 2006 ATOS, ANR TECSAN 2008 SUBVACEL, ANR ETEC 2009 BIOIMPLANT, ANR ETEC MATRI+ 2010, ANR TECSAN 2010 CHITOART, ANR TECSAN 2010 BONE PRINTING, ANR BLANC 2010 BIOCERPORDDS2,

AAP RCT 2010 NASEPT,

FUI 2015 COLOMATRIX,

FONDATION DE L'AVENIR 2011, 2012, 2013, 2015

ITECH FP7 2015

Education:

Main degrees

2011 **Valorisation of Biomedical Research and Innovation University Degree** (Pierre & Marie Curie Paris 6 University)

2002 **Pharmaco-Epidemiology University Degree** (Bordeaux University)

2001 **PhD in Neurosciences and Neuro-pharmacology** (Bordeaux University) *Grant of the Medical Research Foundation*

1997 **Neurosciences and Pharmacology, Cellular Biology and Physiology Master** (Bordeaux University)

Continuing formation

2015 **Training to management** (MOOC URFIST & Bordeaux CHU)

2007 **Training to experimentation on animals, Level I** (INSERM, Bordeaux)

2002/2009 **Clinical Research** (INSERM and CHU de Bordeaux)

2003/2009 **English** (Bordeaux)

2005 **Quality Insurance** (INSERM, Bordeaux)

1999 **Industrial property** (INPI, Bordeaux)

Links:

Linkedin: https://www.linkedin.com/in/marl%C3%A8ne-durand-3437641b?trk=nav_responsive_tab_profile

ResearchGate: <https://www.researchgate.net/home>

Viadeo: <http://www.viadeo.com/p/0022842tq51rwokd/edit?viewType=main>

CIC-IT: <http://www.cic-it-bordeaux.fr/>

PTIB: <http://www.ptib.u-bordeaux2.fr/index.php?p=accueil>

2ACBI: <http://www.2acbi-asso.fr/>

Master BIDIM: http://www.u-bordeaux.fr/formation/PRMABS_142/master-professionnel-mention-biologie-sante-specialite-biomateriaux-et-dispositif-medicaux

ITECH project: <http://www.itech-project.eu/>

BxCR: Bordeaux Consortium for Tissue Engineering: <https://bcrm.u-bordeaux.fr>

BIOMAT: The French association for the development of biomaterials, Tissue Engineering and Regenerative Medicine: <http://www.biomat.fr>