

BERNARD Monique

Research Director at CNRS
Director Centre de Résonance Magnétique Biologique et Médicale (CRMBM)
UMR 7339 CNRS/Aix-Marseille Université

Curriculum vitae

BERNARD Monique

Date of birth: 28 July 1958

Family status : married, 3 children

Nationality : French

e-mail : monique.bernard@univ-amu.fr

Tel : 0491256539

Centre de Résonance Magnétique Biologique et Médicale (CRMBM)
UMR 7339 CNRS/Aix-Marseille Université
27 Bd Jean Moulin
13385 Marseille cedex 5

Education

1980 Master in Biochemistry, Aix-Marseille University, France

1983 PhD in Biochemistry, Aix-Marseille University, France

1989 “Doctorat d’Etat es Sciences physiques », Aix-Marseille University, France

Research and/or professional experience

2012- present Director of “Centre de Résonance Magnétique Biologique et Médicale” CRMBM,
UMR 7339, Aix-Marseille Université-CNRS

2008-2012 Deputy Director of “Centre de Résonance Magnétique Biologique et Médicale” UMR
7339, Aix-Marseille Université, France

1999-present Research director at CNRS (Directeur de recherche (DR2, then DR1 since 2006),
« Centre de Résonance Magnétique Biologique et Médicale », head of the
cardiovascular team

1990-1999 Research officer at CNRS (Chargée de Recherche (CR1), Centre de Résonance
Magnétique Biologique et Médicale, UMR CNRS 6612, Faculté de Médecine, Marseille

1989-1990 Research fellow (NATO and Fulbright scholar), Harvard Medical School and Brigham
and Women’s Hospital, NMR Laboratory for Physiological Chemistry Boston, USA.

1985-1989: Research officer at CNRS (Chargée de Recherche (CR2), Laboratoire de Biologie
Physico-chimique- Aix-Marseille Université, Marseille, France.

Research interests

My research interests are focused on the study of metabolic, physiological and functional alterations during cardiovascular pathologies related to diffuse or localized ischemia (atherosclerosis, diabetic and obesity related cardiomyopathy, atrial fibrillation, ischemia during transplantation) both in animal models and humans. Magnetic resonance techniques with both spectroscopy (MRS, ^{31}P , ^{23}Na and ^1H) and imaging (MRI) are combined to biochemical analyses (HPLC, enzymatic analyses) and molecular biology methods (protein expressions). Experimental models range from the isolated perfused murine heart to animal models to human.

Honors and Awards

1985 : award from the “Federation de Cardiologie”

1989-1990 : Fullbright Scholar

1989-1990 : NATO fellowship

2000 : president of the 6th International symposium “Magnetic resonance in Cardiovascular Research”

2013: award from Marseille Science Academia
2021: Nomination National Order of Merit

Membership on public advisory committees (last ten years)

- Elected Member of the Scientific committee of Medical School of Marseille (since 2006)
- Member of section 28 (imaging, bioengineering, pharmacology) of CNRS Comité National since 2012-2021, President from 2016 to 2021.
- Coordinator of the Marseille node for Bioimaging of the National Infrastructure “France Life Imaging” and member of the national steering committee since 2012
- Councillor for the national Institute for health technology (ITMO Technologies pour la santé) since 2012
- Member of the steering committee of Institut Carnot STAR since 2016
- Member of the Scientific committee “Ligue contre le cancer grand ouest” since 2019
- Deputy director of Marseille Imaging Institute since september 2019
- Member of CNRS Health Mirror Group dedicated to Horizon Europe since 2021
- “Chargée de mission” CNRS engineering institute (INSIS) since January 2022

Expertises :

Member of the National Panel of Experts on Organ Transplantation, INSERM (2007-2009).
Evaluation of national and international research grants : Programme Hospitalier de Recherche Clinique (PHRC), Agence Nationale de la Recherche (ANR), Agence de la Biomedecine, PEPS projects of CNRS, Hcéres, Ligue contre le Cancer, Région Aquitaine, Ville de Paris, Sorbonne Université, région île de France, CIFRE fellowships, Medical Research Council, Wellcome Trust, Diabetes UK (GB), Technology Foundation (Netherlands), Swiss National Foundation, Bridge Discovery (Switzerland), Israel Science Foundation, Research Council KU Leuven (Belgium).

Editorial activity :

Member of the editorial committee of the journal of the international Society of Magnetic Resonance « Journal of Cardiovascular Magnetic Resonance » (2007-2011).
Referee for numerous journals (imaging, cardiovascular, generalist)

Selected publications (total 163 peer reviewed papers, 16 book chapters, 1 patent-
<https://orcid.org/0000-0002-3179-8698>).

1. Anzawa R, Bernard M, Tamareille S, Baetz D, Confort-gouny S, Gascard JP, Cozzone P, Feuvray D. Intracellular sodium increase and susceptibility to ischaemia in hearts from type 2 diabetic db/db mice. **Diabetologia**. (2006); 49 : 598-606.
2. Kober F, Canault M, Peiretti F, Mueller C, Kopp F, Alessi MC, Cozzone PJ, Nalbone G, Bernard M. MRI follow-up of TNF-dependent differential progression of atherosclerotic wall thickening in mouse aortic arch from early to advanced stages. **Atherosclerosis**, (2007) ; 195: e93-e99.
3. Desrois, M., K. Clarke, C. Lan, C. Dalmaso, C. Mark, B. Portha, P. J. Cozzone, and M. Bernard. Increased susceptibility of type 2 diabetic rat heart to ischaemic injury and Nitric Oxide pathway changes. **Am J of Physiol Heart Circ Physiol**. 2010, 299 : 1679-1686.
4. Jacquier, A, Kober F, Bun S, Giorgi R, Cozzone PJ, Bernard M. Quantification of Myocardial Blood Flow and Flow Reserve in Rats Using Arterial Spin Labeling MRI, Comparison with a Fluorescent Microsphere Technique. **NMR Biomed.**, (2011) , 24 (9) : 1047-1053.
5. Moro PJ, Flavian A, Jacquier A, Kober F, Quilici J, Gaborit B, Bonnet JL, Moulin G, Cozzone PJ, Bernard M. Gender differences in response to cold pressor test assessed with velocity-encoded cardiovascular magnetic resonance of the coronary sinus. **J Cardiovasc Magn Reson**. (2011) 23;13:54.
6. Bun S, Kober F, Jacquier A, Espinosa L, Kopp F, Zaffran S, Lalevée N, Kalifa J, Deharo JC, Cozzone P, Bernard M. Value of in-vivo T2 Measurement for Myocardial Fibrosis Assessment in Diabetic Mice at 11.75T. **Invest Radiol** (2012) 47(5): 319-323.

7. Gaborit B, Jacquier A, Kober F, Abdesselam I, Cuisset T, Boullu-Ciocca S, Emungania O, Alessi MC, Clément K, Bernard M, Dutour A Effects of bariatric Surgery on cardiac ectopic fat: lesser decrease in epicardial fat compared to visceral fat and no change in myocardial triglyceride content. **J Am Coll Cardiol.** (2012);60(15):1381-1389.
8. Troalen T, Capron T, Bernard M, Kober F. In vivo characterization of rodent cyclic myocardial perfusion variation at rest and during adenosine-induced stress using cine-ASL cardiovascular magnetic resonance. **J Cardiovasc Magn Reson.** 2014 Feb 18;16(1):18.
9. Capron T, Troalen T, Robert B, Jacquier A, Bernard M, Kober F. Myocardial perfusion assessment in humans using steady-pulsed arterial spin labeling. **Magn Reson Med.** 2015 Oct;74(4):990-8.
10. Abdesselam I, Pepino P, Troalen T, Macia M, Ancel P, Masi B, Fourny N, Gaborit B, Giannesini B, Kober F, Dutour A, Bernard M. Time course of cardiometabolic alterations in a high fat high sucrose diet mice model and improvement after GLP-1 analog treatment using multimodal cardiovascular magnetic resonance. **J Cardiovasc Magn Reson.** 2015 6;17:95.
11. Habert P, Bentatou Z, Aldebert P, Finas M, Bartoli A, Bal L, Lalande A, Rapacchi S, Guye M, Kober F, Bernard M, Jacquier A. Exercise stress CMR reveals reduced aortic distensibility and impaired right-ventricular adaptation to exercise in patients with repaired tetralogy of Fallot. **PLoS One.** 2018 Dec 31 ; 13 (12) : e0208749.
12. Rapacchi S, Troalen T, Bentatou Z, Quemeneur M, Guye M, Bernard M, Jacquier A, Kober F. Simultaneous multi-slice cardiac cine with Fourier-encoded self-calibration at 7 Tesla. **Magn Reson Med.** 2019 Apr;81(4):2576-2587.
13. Lutz NW, Bernard M. A method for multiparametric statistical quantification of the heterogeneity of free Na⁺ concentration by 19 F MR spectroscopy: Proof of principle in silico and in vitro. **NMR Biomed.** 2019 Jul 12:e4117.
14. 6. Lutz NW, Bernard M. Contactless Thermometry by MRI and MRS: Advanced Methods for Thermo-therapy and Biomaterials. **iScience** 2020:101561.
15. Fournel J, Bartoli A, Bendahan D, Guye M, Bernard M, Raaseo E, Khanji MY, Petersen SE, Jacquier A, Ghattas B Medical image segmentation automatic quality control: A multi-dimensional approach. **Med Image Anal.** 2021 Aug 12;74:102213.