

Personal Information

Family name, First name: MARTIN, Donald

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Nationality: Australian

Permanent Residency: France

Education

1985 PhD (biophysics) – Faculty of Science, University of New South Wales (UNSW), Australia

1992 Master of Biomedical Engineering – Faculty of Engineering, UNSW, Australia

1980 Bachelor of Optometry (mention: Honours) – Faculty of Science, UNSW, Australia

1998 Graduate Certificate of Higher Education, Faculty of Arts & Social Sciences, UTS, Australia

Current Position(s)

2011 – now Professeur des universités (*classe exceptionnelle*), LMGP (UMR5628) and Faculty of Pharmacy, University of Grenoble Alpes, France

2011 – now Honorary Senior Fellow, Fac. Med., Dentistry, Health Sciences, Univ. Melbourne, Australia

Previous Positions (since 2000)

2009 – 2011 Chaire d'Excellence – Fondation Nanoscience RTRA, France

2000 – 2009 Associate Professor – Faculty of Science, University of Technology Sydney (UTS), Australia

Fellowships and Awards

2024 ERC Advanced Grant (2,9M€)

2023 – 2027 RIPEC C3

2014 – 2022 Prime d'Encadrement Doctoral et de Recherche (PEDR), France (2 consecutive French government awards for excellence in leading science)

2009 – 2011 Chaire d'Excellence, (Fondation Nanoscience RTRA), France (awarded Research Professorship in nanotechnologies in international competition)

1992, 1993 Award for Excellence in Research, (St Vincent's Hospital), Australia (consecutive years)

1988 – 1991 Postdoctoral Research Fellowship, Medical Found., Univ. Sydney, Australia (inaugural award by Univ. Sydney, for research in ion channel electrophysiology)

1982 – 1983 Pank Ophthalmic Research Trust Grant, Australia

1982 – 1983 L.K. Woodland Research Grant, (Australian Optometrical Association), Australia

1982 Bausch & Lomb Travel Grant, U.S.A (only 5 awarded world-wide to PhD students)

1980 – 1981 Contavue-Cooper-OVRF Postgraduate Research Scholarship, Australia

1980 – 1981 H.J. Alexander Memorial Research Grant, (Australian Optometrical Association), Australia

Supervision of Graduate Students and Postdoctoral Fellows

2024 – 2029 ERC-funded positions for 3 Postdocs, 3 PhDs, 1 technician, 1 engineer, **France**

2011 – 2023 13 Postdocs, 9 PhDs, 1 DPharm, 25 Master
Faculty of Pharmacy, Université Grenoble Alpes, **France**

1997 – 2011 5 Postdocs (+6 funded by my grant *OzNano2Life*), 6 PhDs, 1 MD, 13 Master/Hons
Faculty of Science, University Technology Sydney, **Australia**

Teaching Activities

2024 – 2029 UGA: coordination/teaching for 2 subjects at Master level (*ERC teaching discharge of 128 h*)

2011 – 2023 UGA: coordination/teaching for 5 subjects at Master level, and 1 undergraduate subject

2019 (Oct) University of Tirana (Albania): invited to teach at 1 week Eurobiotech School (Master)

2013 – 2019 Grenoble INP – Phelma: taught subject “*in vivo Energy Sources*”, within the Master program “*Systèmes et Microsystèmes pour la Physique et les Biotechnologies*”

2012 – 2013 Katholieke Universiteit Leuven, Belgium: lectures on “*Biomimetic Membranes and Nanobiotechnology*”, for the Capita Selecta and Erasmus Mundus Lectures

2000 – 2009 UTS (Australia): coordinated and taught 5 subjects at undergraduate level

Organisation of Scientific Meetings – National and International

- National INSERM Workshop 253 “*Organ-on-chip: understanding and mimicking living organsims for better treatment*”, Phase I (2 days) in Bordeaux and Phase II (3 days) in Lyon/Grenoble, France (2018, 80 participants). My role was co-organiser, co-chair with Dr N. Picollet-d'Hahan (CEA) and Dr C. Marquette (Univ Lyon 1).
- Tissue Engineering & Regenerative Medicine International Society (TERMIS – AP), Sydney (2010, 350 intern. participants). I was organiser, co-chair and keynote speaker of session 6D.
- Biotechnology Industry Organisation (BIO), U.S.A, 15,000 international participants each year. Over a 5-year period, my role was to conceive, organise and chair the panel symposia “*Nanotechnology of Membranes: Novel Applications*” (2003), “*Making BioSystems Talk to*

Microelectronics” (2004), “*Nanoscaled Systems: The New Frontier in High-Throughput Drug Discovery*” (2005), “*Nanomedicine: Nanosensors and Nanodevices for Human Health Management*” (2008).

- Forum for European-Australian Science & Technology Cooperation (FEAST), international conference “*Networking for Excellence*”, Canberra, Australia (2003, 200 international participants). I was manager and organiser of Workshop “*Nanotechnology and Nanosciences*”.

Invitations to Juries to Examine HDR and PhD

2024 (24 June) President/Examinateur for the HDR of Mr. Christophe BATTAIL (CEA, France)
 2022 (25 March) President/Examinateur for the PhD thesis of Mme. Mathilde FOLACCI (IBS, France)
 2022 (31 March) Examinateur for the PhD thesis of Mr. Larry O’CONNELL (CEA, France)
 2021(28 Sept) Rapporteur for the HDR of Mme. Gaëlle OFFRANC PIRET (INSERM U1205, France)
 2016 (13 Dec) Rapporteur for the PhD thesis of Mr. Sinan MUL DUR (Univ Lyon 1, France)
 2010 (6 Dec) Examinateur for the PhD thesis of Mr. Jesper HANSEN (DTU Nanotech, Denmark)

Invitations as an Expert for National and International Funding Agencies and Institutions

France • Agence Nationale de la Recherche (ANR) as expert for pNANO program, and expert Committee Member for the panel SVSE 5 (in 2013);
 • CNRS, expert Committee Member for INSIS Cellule de Veille (in 2015);
 • Ligue Contre de la Cancer (Auvergne-Rhône-Alpes), Scientific Council (since 2017)
Australia ARC and NHMRC as expert reviewer for research projects (since 2007)
Ireland Irish government (Enterprise Ireland) as international expert evaluator; University College Cork as international expert reviewer for evaluation of Tyndall National Institute (from 2008 to 2013)
Portugal Portugese government (Fundação para a Ciência e a Tecnologia, FCT) (since 2015)
Qatar Qatar National Research Fund (in 2010)

Editorial Activities – International Scientific Journals (*year of appointment is indicated*)

2023 – now Associate Editor, *Materials Technology* (ISSN: 1066-7857 & 1753-5557, Taylor & Francis)
 2018 – now Managing Editor, *Eurobiotech Journal* (ISSN: 2564-615X, Sciendo/De Gruyter)
 2018 Guest Editor, *Biotechnology Journal* (ISSN: 1860-7314, Wiley)
 2016 – now Editorial Board Member, *Canadian Journal of Biotechnology* ISSN: 2560-8304, Science Planet)

Service on Scientific and Professional societies

2020 – now Member, Bioethics Committee for the MAGI Group (Italy)
 2018 – now Secretary-General, “*European Biotechnology Thematic Network Association*” (EBTNA)
 2017 – 2022 Member, Research Network “*internat. Society for Medical Innovation and Technology*”
 2005 Founder, Australian Research Network in Nanobiotechnology “*OzNano2Life*”

Leadership in Innovation and Technology Transfer (in France)

2023 – now Co-founder, French startup company WatPILL SAS.
 2022 – now Co-founder, French startup company The Element Biotechnology SAS
 2021 – now Co-founder, French startup company Pelican Health SAS

Recognised Major Contributions to Science

I am currently a laureate for an Advanced Grant awarded by the European Research Council. The ERC Advanced Grants are designed to support excellent Principal Investigators at the career stage at which they are already established research leaders with a recognised track-record of research achievements. Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal to be undertaken with the funding from the Advanced Grant.

During my employment in Australia, I was invited by the Australian and French Governments to a mission to France in the field of nanotechnology (French-Australian Industrial Research, 2002). At this time, my research team at the University of Technology Sydney was recognised in the scientific literature as a one of the key nanotechnology groups in Australia^[1]. To follow-up, I obtained funding from the Australian government to lead a mission of 7 Australian scientists to attend the conference “*Nanobiotechnologies II*” in Grenoble (2003). My contributions to science and technology were officially recognized in the Hansard records of the NSW Parliament during a parliamentary debate on the biotechnology industry (2004). I conceived, obtained the funding, and was PI for the Australian network in nanobiotechnology *OzNano2Life* (\$975,000 from the International Science Linkages program of the Australian government, 2005). *OzNano2Life* directly funded six postdoctoral researchers to develop their careers in institutions across Australia and provided the portal for exchanging structured scientific information with nanotechnology institutes in Europe. *OzNano2Life* generated outcomes including 1 book, 3 book chapters, 3 patents, and 105 journal articles. I am proud of these outcomes, but only my

¹ Braach-Maksvytis V. “Nanotechnology in Australia – towards a national initiative”. *Journal of Nanoparticle Research*, 4:1-7, 2002

directly authored works are listed in my track record because the overall *OzNano2Life* outcomes resulted from the combined efforts of the senior scientists, postdocs, and PhD students.

On-going Grants from Major Funding Agencies

Project Title	Funding source	Amount (€)	Period	Role of Pr Martin
Energion	ERC Advanced Grant	2 858 020	2024 - 2029	PI, laureate Advanced Grant
NeuroMorph	BPIFrance, FITInnovE	160 000	2024 - 2025	PI & coordinator

Description of track-record since 2009

In 2009, my career shifted from Australia to France when the French government awarded me a Chaire d'Excellence to create a research program in nanobiotechnology at the Fondation RTRA Nanosciences-UGA.

In 2012, I founded and was head of the research team SyNaBi (*Systèmes Nanobiotechnologiques et Biomimétiques*) in the laboratory TIMC. From 2025 I moved with the core of my research team to the laboratory LMGP (UMR 5628).

I am recognized internationally as an expert in nanobiotechnology of biomimetic membranes. From the beam-time access awarded to conduct neutron and x-ray scattering experiments (ILL, ESRF), my team has published the nanostructural characterization of tethered lipid bilayers that incorporate membrane transport proteins. I have developed a *technological strategy* based on my patent for an engineered biomimetic artificial membrane device that contains membrane transporting proteins, which provides a building block for several devices.

In 2024 I was awarded an ERC Advanced Grant based on my leadership in the field of nanobiotechnology of biomimetic membranes (<https://cordis.europa.eu/project/id/101142533>)

Representative Publications

I am the senior author in the following 10 publications, chosen from the total of 77 published items in the last 10 years (and more than 180 total published items). These selected publications highlight significant results in 4 key research areas.

(i) nanostructural characterisation of biomimetic lipid bilayer membranes

- Maccarini M, Watkins EB, Stidder B, Alcaraz JP, Cornell BA, Martin DK (2016). Nanostructural determination of a lipid bilayer tethered to a gold substrate. *Eur Phys J E*, 39:123
- Stidder B, Alcaraz JP, Liguori L, Khalef N, Bakri A, Watkins E, Cinquin P, Martin DK (2012). Biomimetic membrane system composed of a composite interpenetrating hydrogel film and lipid bilayer. *Adv Func Mater*, 20:4259-426

(ii) function of ion transporting proteins incorporated in biomimetic lipid bilayer membranes

- Ben Tahar A, Zebda A, Alcaraz JP, Gayet L, Boualam A, Cinquin P, Martin DK (2019). A PANI supported bilayer that contains NhaA transporter proteins provides a basis for a biomimetic capacitor. *Chem Commun*, 55:13152-13155
- Maccarini M, Gayet L, Alcaraz JP, Liguoria L, Stidder B, Cortès S, Watkins E, Lenormand JL, Martin DK (2017). Functional characterization of cell-free expressed OprF proin from *Pseudomonas aeruginosa* stably incorporated in tethered lipid bilayers. *Langmuir*, 33:9988-9996

(iii) biomimetic surfaces and biocompatibility

- Picollet-D'hahan N, Gerbaud S, Kermarrec F, Alcaraz JP, Obeid P, Ricky Bhajun R, Guyon L, Sulpice E, Cinquin P, Dolega M, Wagh J, Gidrol X, Martin DK (2013). The modulation of attachment, growth and morphology of cancerous prostate cells by polyelectrolyte nanofilms. *Biomaterials*, 34:10099-10108
- Picollet-d'hahan N, Dolega ME, Liguori L, Marquette C, Le Gac S, Gidrol X, Martin DK (2016). A 3D toolbox to enhance physiological relevance of human tissue models. *Trends in Biotech*, 34:757-769

(iv) the development of implanted medical devices

- Zebda A, Alcaraz JP, Vadgama P, Shleev S, Minter S, Boucher F, Cinquin P, Martin DK (2018). Challenges for successful implantation of biofuel cells. *Bioelectrochemistry*, 124:57-72
- El Ichi-Ribault S, Alcaraz JP, Boucher F, Boutaud B, Dalmolin R, Boutonnat J, Zebda A, Cinquin P, Martin DK (2018). Remote wireless control of an enzymatic biofuel cell implanted in a rabbit for 2 months. *Electrochim Acta*, 269:360-366
- El Ichi S, Zebda A, Laaroussi A, Reverdy-Bruas N, Chaussy D, Belgacem MN, Cinquin P, Martin DK (2014). Chitosan improves stability of carbon nanotube biocathodes for glucose biofuel cells. *Chem Commun*, 50:14535-14538

- El Ichi S, Zebda A, Alcaraz JP, Laaroussi, A, Boucher F, Boutonnat J, Reverdy-Bruas N, Chaussy D, Belgacem MN, Cinquin P, Martin DK (2015). Bioelectrodes modified with chitosan for long-term energy supply from the body. *Energy & Environ Sci*, 8:1017-1026

Research monographs and translations

- Martin DK, Vilgrain I (2025). *Biomimetic Membrane Technology: biological engineering and nanomedicine*. Springer Nature, ISBN 978-3-031-90594-0
- My book published by Springer (NY, U.S.A.) is titled “*Nanobiotechnology of Biomimetic Membranes*”^[2]. Since 2007, the book has sold >320 copies (paper-form) and >2,974 copies (electronic-form). In 2012 it was translated into Russian and published by MIR, Moscow. Springer has now invited me to author a 2nd edition.
- Martin DK (2024). Nanostructured Systems Based on the Approach of Biological Engineering, in Deleonibus S (ed.) “*Outlooking beyond Nanoelectronics and Nanosystems: Ultrascaling, Pervasiveness, Sustainable Integration, and Biotic Inspirations*”, Jenny Stanford Publishing, ISBN 978-981-5129-32-8
- Martin DK, Schyvens CG, Wyse KR, Bursill JA, Owe-Young RA, Macdonald PS, Campbell TJ (2012). Role of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), in Modulating Vascular Smooth Muscle Cells by Activating Large-Conductance Potassium Ion Channels. In Fatima Shad K (ed.) “*Patch Clamp Technique*”, InTech, Slovakia, ISBN 979-953-307-386-5 (down-loaded 2,109 times since March 2012)
- Simpson AM, Swan AM, Jiu GJ, Tao C, O’Brien BA, Ch’ng E, Leticia-Castro M, Ting J, Elgundi Z, An T, Lutherborrow, Torpy F, Martin DK, Tuch BE, Nicholson GM (2012). Insulin Trafficking in a Glucose Responsive Engineered Human Liver Cell Line is Regulated by the Interaction of ATP-Sensitive Potassium Channels and Voltage-Gated Calcium Channels, in Molina F.M. (ed.) “*Gene Therapy – Tools and Potential Applications*”, InTech, Slovakia, ISBN 978-953-51-1014-9 (down-loaded 2,126 times since February 2013)

Patents since 2015

I am an inventor on 17 patents. From those, listed below are the granted patents (and licenced to companies):

- (1) Martin DK, Picollet-D’hahan (2024). Cell co-culture chip and process for the production thereof. US 11,857,958
- (2) Martin DK, Picollet-D’hahan (2022). Method for diagnosing genitourinary cancers. US 11,268,961
- (3) Zebda A, Cinquin P, Alcaraz JP, Martin DK, Bakri A, Khalef N (2022). Thermo-electric generator, associated implantable device and method. US 11,469,433
- (4) Cinquin P, Schneider D, Maurin M, Martin DK, El Ichi S, Zebda A, Alcaraz JP, Reche F, Tuvignon P, Thelu J, Le Gouellec A, Toussaint B (2021). Implantable intestinal reactor. US 10,960,191
- (5) El Ichi S, Martin DK, Cinquin P, Zebda A (2019). Implantable biocompatible reactor. US 10,316,284
- (6) Cinquin P, Martin DK (2017). Biomimetic artificial membrane device. US 9,577,280

Invited presentations at national and international conferences since 2013 (out of career total of 98)

Since 2019, I have been invited as a keynote speaker to 12 conferences, and an additional 6 conferences as an invited speaker. For recent examples as a keynote speaker:

- (1) “*Bio-X Conference*”, Zagreb, Croatia, 28 May – 4 June, 2024
- (2) “*European Biotechnology Congress*”, Ljubljana, Slovenia, 4-6 October 2023
- (3) “*European Biotechnology Congress*”, Prague, Czech Republic, 5-8 October 2022
- (4) “*2nd annual Nanobio Conference*”, Florida, U.S.A., 22-24 April 2022
- (5) “*MAGI Biotech Congress*”, Venice, Italy, 3-4 October 2021
- (6) “*AVIESAN 4e Journée sur l’Innovation Technologique*”, Paris, France, 24 January 2019

In addition, in 2019, Keio University invited me to present a seminar at “*Dentsu ScienceJam*” (Tokyo, Japan, 4 October). In 2021, Ben-Gurion University invited me to present a seminar in the Department of Biotechnology Engineering (Israel, 21 November). In 2014, the French Embassy invited me to speak at an international symposium on tissue engineering held in Berlin, Germany (4-5 December).

² <http://www.springer.com/fr/book/9780387377384>