



Dr Fabien Kawecki, Ph.D.

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Research interests:

Cardiovascular diseases (CVDs) are the leading cause of mortality in the USA in 2019. Surgical intervention using bypass grafts may be necessary in advanced CVD cases. Autologous vascular grafts harvested from internal mammary arteries or saphenous veins remain the gold standard for vascular repairs. However, the accessibility to these grafts may be limited due to the donor site morbidity of previous use, the patient's age, and/or the cardiovascular pathology itself. In addition, this type of graft generally fails ten to 12 years after implantation.

Artificial alternatives are commercially available and have been successfully used. Generally, these synthetic vascular grafts (SVGs) are composed of e-PTFE or woven/knitted PET fibers with the patency rates ranging from 40% to 50%. Unfortunately, when applied to small diameter vessels (ID < 6 mm), these artificial grafts displayed far lower patency. Tissue-engineered vascular grafts (TEVGs) composed of a naturally-derived scaffold and/or living cells exhibit attractive assets that can address these limitations.

Our research interest focuses on the development and the characterization of a TEVG composed of a cell-assembled matrix (CAM) and produced by an innovative textile-based approach.

Areas of Expertise:

- Skin, cardiovascular, and bone tissue engineering
- Cell sheet technologies used in tissue engineering
- Tissue microvascularization and grafting
- 2D and 3D cell cultures
- 4D Bioprinting and 3D printing
- Biomaterials and medical devices

Education:

Ph.D. Degree in Experimental Medicine Université Laval, Faculty of Medicine, Quebec City, Canada	2015-2019
M.Sc. Degree in Biomedical Engineering (Master BiDiM) Université de Bordeaux, Bordeaux, France	2012-2014
B.Sc. Degree in Molecular, Cellular, and Physiological Biologies Université de Bordeaux, Bordeaux, France	2009-2012

Professional Experience:

Post-Doctoral Researcher & Team Manager INSERM U1026 BioTis, Bordeaux, France	2019-(in progress)
R&D Project Manager Poietis, Pessac, France	2018-2019
Visiting Ph.D. Candidate INSERM U1026 BioTis, Bordeaux, France	2016-(4 months)
Ph.D. Candidate Researcher Laboratoire d'organogénèse expérimentale (LOEX), CHU de Québec, Université Laval, Québec, Canada	2015-2018
Research Assistant Groupe de recherche en économie théorique et appliquée (GREThA), Université de Bordeaux, Talence, France	2014-(3 months)
M.Sc. Candidate Intern in Skin Tissue Engineering Laboratoire d'organogénèse expérimentale (LOEX), CHU de Québec, Université Laval, Québec, Canada	2014-(6 months)

Publications:

- Kawecki F et al. (2020). Biofabrication and preclinical evaluation of a large-sized human self-assembled skin substitute. *Biomedical Materials*. doi: 10.1088/1748-605X/ABDBE
- Rassoli A et al. (2020). Donkey pericardium as a select sourcing to manufacture percutaneous heart valves: decellularization has not yet demonstrated any clear cut advantage to glutaraldehyde treatment. *Medicine in Novel Technology and Devices*. doi: 10.1016/j.medntd.2020.100029
- Kawecki F et al. (2018). Self-assembled human osseous cell sheets as living biopapers for the laser-assisted bioprinting of human endothelial cells. *Biofabrication*. doi: 10.1088/1758-5090/aabd5b
- Kawecki F et al. (2018). Biomimetic Tissue-Engineered Bone Substitutes for Maxillofacial and Craniofacial Repair: The Potential of Cell Sheet Technologies. *Advanced Healthcare Materials*. doi: 10.1002/adhm.201700919
- Galbraith T et al. (2017). A Cell-Based Self-Assembly Approach for the Production of Human Osseous Tissues from Adipose-Derived Stromal/Stem Cells. *Advanced Healthcare Materials*. doi: 10.1002/adhm.201600889
- Picard-Deland M et al. (2017). Tissue-Engineered Tubular Heart Valves Combining a Novel Precontraction Phase with the Self-Assembly Method. *Annals of Biomedical Engineering*. doi: 10.1007/s10439-016-1708-1

Patent:

- Guillemot F, Kawecki F, Roubertie F, Metras A, Jalal Z, Thambo J-B, and Labrousse L. "Procédé de fabrication d'une valve biologique par bio-impression", French Patent: FR2009845 (September 2020)

Awards:

Foundation for Medical Research Post-Doctoral Fellowship	2020-2023
Grant of the "Fondation du CHU de Québec – Axe Médecine Régénératrice"	2017
Best oral presentation award at the "Université Laval" Surgery Department Research Day	2017
Educational Fellowship of "AELIÉS" for international doctoral internship	2016

Experimental Organogenesis Research Center (LOEX) Excellence Grant	2016
Sr. Mallet Doctoral Fellowship	2015-2017
“Université Laval” Faculty of Medicine Doctoral Scholarship	2015
Mobility Fellowship of the “Ministère de l'Enseignement Supérieur et de la Recherche – AQUIMOB”	2014
Franco-Québécoise Youth Office Mobility Fellowship	2014

Links:

LinkedIn : <https://www.linkedin.com/in/fabien-kawecki-phd-34a16b69>

ResearchGate: https://www.researchgate.net/profile/Fabien_Kawecki