

Philippe ABDEL-SAYED, PhD

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EDUCATION

- 11.2009 – 12.2013 **Doctor of Philosophy** in Bioengineering and Biotechnology
Swiss Federal Institute of Technology, **EPFL** (Lausanne, Switzerland)
- Thesis title: “Dissipation as a variable in cartilage mechanobiology”, under the direction of Prof D. Pioletti
- 09.2007 – 07.2009 **Master of Science** in Bioengineering and Biotechnology
Swiss Federal Institute of Technology, **EPFL** (Lausanne, Switzerland)
- Minor in **Biomedical Engineering**
- 10.2004 – 07.2007 **Bachelor of Science** in Life Sciences and Technology
Swiss Federal Institute of Technology, **EPFL** (Lausanne, Switzerland)
- Highly quantitative courses at the interface of Engineering and Biosciences

PROFESSIONAL EXPERIENCE

- 10.2015 – Present **UC Berkeley (California, USA), Postdoctoral Researcher**
- Development of a microfluidic point-of-care diagnostic system
- 01.2014 – 08.2015 **SwissTransMed B5 Platform (EPFL, Lausanne, Switzerland), Postdoctoral Researcher**
- Consortium between the Universities of Geneva, Zurich, Lausanne, Bern and EPFL, for the development of biological biodegradable and anti-bacterial burn-wound bandages
- 11.2009 – 12.2013 **Laboratory of Biomechanical Orthopedics (EPFL), Research Assistant**
- 09.2008 – 07.2009 **Stryker Osteosynthesis-EPFL (Selzach, Switzerland), Junior Research-Assistant**
- 07.2008 – 09.2008 **University Hospital CHUV (Lausanne, Switzerland), Trainee**

LANGUAGES, IT-SKILLS & TECHNICAL COMPETENCIES

- Languages:**
- French** – mother tongue
 - English** – full professional proficiency
 - German** – lower intermediate
 - Arabic** – bilingual
- IT skills:** MS Office (PowerPoint, Word and Excel), MATLAB, C/ C++, FORTRAN, SolidWorks, Abaqus, Perl and LabView
- Technical competencies:** Microfluidics, Photolithography, Image/signal processing, 3D modeling, Finite Element analysis, Micro-computed tomography, Cell culture, Transient transfection of mammalian cell lines, gel Electrophoresis, Immunoblot analysis of proteins, quantitative Real Time Polymerase Chain Reaction, histology, rheometry, mechanical testing, Design of Experiments (DoE).

PUBLICATIONS

Journal papers:

Abdel-Sayed P, Kaeppli A, Siriwardena T, Darbre T, Perron K, Jafari P, Reymond JL, Pioletti DP, Applegate LA. Anti-microbial peptide dendrimers against multidrug-resistant *P. aeruginosa* enhance the angiogenic effect of biological bandages. *Scientific Reports (Nature Publishing)*. 6, 22020; doi: 10.1038/srep22020 (2016).

Abdel-Sayed P, Pioletti DP. Strategies for improving the repair of focal cartilage defects. *Nanomedicine (Lond.)*. 2015; 10(18): 2893-2905.

Abdel-Sayed P, Darwiche SE, Kettenberger U, Pioletti DP. The role of energy dissipation of polymeric scaffolds in the mechanobiological modulation of chondrogenic expression. *Biomaterials*. 2014; 35: 1890-1897

Abdel-Sayed P, Nassajian Moghadam M, Salomir R, Tchernin D, Pioletti DP. Intrinsic viscoelasticity increases temperature in knee cartilage under physiological loading. *Journal of the Mechanical Behavior of Biomedical Materials*. 2014; 30: 123-130

Abdel-Sayed P, Vogel A, Moghadam M, Pioletti DP. Cartilage self-heating contributes to chondrogenic expression. *European Cells and Materials Journal* 2013; 26: 171-178.

Abdel-Sayed P, Kalejs M, von Segesser LK. A new training set-up for trans-apical aortic valve replacement. *Interac CardioVasc Thorac Surg* 2009; 8: 599-601

Moghadam MN, **Abdel-Sayed P**, Camine VM, Pioletti DP. Impact of synovial fluid flow on temperature regulation in knee cartilage. *Journal of Biomechanics*. 2015; 48 : 370–374

Kalejs M, Lacis R, Kasyanov V, Ozolanta I, **Abdel Sayed P**, Stradins P, Von Segesser LK. Comparison of radial deformability of stent posts of different aortic bioprostheses. *Interact CardioVasc Thorac Surg*. 2012; 16(2): 129-133

Book chapters:

Philippe Abdel-Sayed and Ludwig Karl von Segesser (2011). Rapid Prototyping for Training Purposes in Cardiovascular Surgery, *Advanced Applications of Rapid Prototyping Technology in Modern Engineering*, Muhammad Enamul Hoque (Ed.), ISBN: 978-953-307-698-0, InTech.

Conference Proceedings:

Abdel-Sayed P, Nassajian Moghadam M, Salomir R, Tchernin D, Pioletti DP. Temperature Increase in Articular Cartilage induced by Viscous Dissipation. European Society of Biomechanics. 2015 (Prague, Czech Republic)

Abdel-Sayed P, Darwiche SE, Jaccoud S, Martin R, Applegate LA, Pioletti DP. Chondroprogenitors as an allogeneic cell source for cartilage repair. International Cartilage Repair Society. 2015 (Chicago, USA)

Abdel-Sayed P, Darwiche SE, Pioletti DP. Mechanical Dissipation As A New Variable For Cartilage Mechanobiology. Orthopedic Research Society. 2014 (New Orleans, USA)

Abdel-Sayed P, Nassajian Moghadam M, Salomir R, Tchernin D, Pioletti DP. Intrinsic Viscoelasticity Increases Temperature In Knee Cartilage Under Physiological Loading Orthopedic Research Society. 2014 (New Orleans, USA)

Abdel-Sayed P, Vogel A, Pioletti DP. Can Act as a Mechanobiological Signal in Cartilage Differentiation. ASME 2013 International Mechanical Engineering Congress & Exposition (San Diego, USA)

Abdel-Sayed P, Vogel A, Pioletti DP. Chondrogenic modulation by thermogenesis. Tissue Engineering and Regenerative Medicine International Society. 2012 (Vienna, Austria)

Khoushabi A, Darwiche SE, **Abdel-Sayed P**, Applegate LA, Pioletti DP. Epiphyseal chondroprogenitors exhibit spontaneous chondrogenesis in photoencapsulating polyethylene glycol dimethacrylate hydrogels. Swiss Society for Biomaterials. 2012 (Zurich, Switzerland)

Abdel-Sayed P, Spoerri P, Grimm A, Pioletti DP. Engineered decellularized intervertebral disc ECM gels for Nucleus Pulposus repair. Orthopedic Research Society. 2012 (San Francisco, USA)

EDITORIAL ACTIVITY

06.2009 – present **Reviewer**, *European Journal of Cardio-Thoracic Surgery*

GRANTS & AWARDS

11.2014 **Early-Postdoc Research Fellowship from the Swiss National Science Foundation**

05.2001 Participation to the **Swiss Final of the International Championship of mathematical and logical games (Prilly, Switzerland)**

07.2000 Participation to the **International Children's Games** with the **Swiss volley team (Hamilton, Canada)**

EXTRACURRICULAR ACTIVITIES

09.2008 – 07.2009 **Class delegate, Faculty of Life Sciences (EPFL, Lausanne, Switzerland)**
Role: meeting with professors and faculty staff, defend the academic interests of the class, events organization

09.2008 – 07.2009 **Teaching Committee Member, Faculty of Life Science (EPFL, Lausanne, Switzerland)**
Role: representative of the students in Bioengineering, partaking in the establishment of the academic curriculum of the Life Sciences School

REFERENCES

Prof. Amy E. Herr, *Department of Bioengineering, UC Berkeley (CA, USA)*
Phone: +1 (510) 666-3396; Email: ach@berkeley.edu

Prof. Dominique Pioletti, *Laboratory of Biomechanics in Orthopedics, EPFL (Switzerland)*
Phone: +41 21 693 83 41; Email: dominique.pioletti@epfl.ch

Prof. Lee Ann Laurent-Applegate, *Regenerative Therapy Unit, UNIL (Switzerland)*
Phone: +41 21 314 35 10; Email: lee.laurent-applegate@chuv.ch

Prof. Ludwig Karl von Segesser, *Department of Cardiovascular Surgery, CHUV (Switzerland)*
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