Curriculum vitae

Maxime Lafond
Postdoctoral fellow
Internal Medicine, Division of Cardiovascular Diseases
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Education

- 2008-2011: Bsc Mecanics and Acoustics, University of Maine (Le Mans, France)

- 2011-2013: Msc Acoustic Engineering, University of Maine (Le Mans, France)

- 2013-2016: PhD Biomedical Engineering, LabTAU INSERM U1032, University of Lyon (Lyon, France)

Professional Experience

- 2010: Internship: Technician in Acoustics (3 months), CETIAT (Lyon, France):
    - Characterization of a Microflown intensimetric probe

- 2012: Research internship (3 months), LAUM (Le Mans, France):
    - Modeling the vibration of an electric guitar string

- 2013: Research internship (6 months), LabTAU INSERM U1032 (Lyon, France):
    - Modeling of confocal ultrasound pressure fields for cavitation applications.

- 2013-2016 (Nov): PhD, LabTAU INSERM U1032 (Lyon, France):
    - Confocal ultrasound for the potentiation of chemotherapy by ultrasonic cavitation without external nucleation agents.

- 2016: Visiting research student, Umemura-Yoshizawa Laboratory, Tohoku University (Sendai, Japan):
    - Development of a three-hydrophones technique for cavitation localization.

- 2017 (Feb)-2018: Post-doctoral fellow, Umemura-Yoshizawa Laboratory, Tohoku University (Sendai, Japan):
    - Cavitation monitoring and optimization of sonodynamic therapy in a clinical setting.

- 2018 (April)-present: Post-doctoral fellow, Image-guided Ultrasound Therapeutics Laboratories, University of Cincinnati (Cincinnati, USA):
    - Development of echogenic immunoliposomes and ultrasound-mediated delivery methodologies for atherosclerotic beds stabilization.

Publications

1. **Lafond M**, Shekhar H, Panmanee W, Collins S, Palaniappan A, McDaniel CT, Hassett DJ, Holland CK, Bactericidal activity of lipid-shelled nitric oxide-loaded microbubbles. Frontiers in Pharmacology, Translational Pharmacology, under review, 2019.

2. Fant C, **Lafond M**, Rogez B, Suarez Castellanos I, Ngo J, Mestas J-L, Lafon C. In vitro potentiation of doxorubicin by unseeded controlled stable ultrasound cavitation. Scientific Reports, conditionally accepted for publication, 2019.

3. Shekhar H, Palaniappan A, Peng T, **Lafond M**, Moody MR, Haworth KJ, Huang S, McPherson D, Holland CK, Characterization and imaging of lipid-shelled microbubbles for ultrasound-triggered release of xenon. Neurotherapeutics, April, 2019.

4. **Lafond M,** Yoshizawa S, Umemura S-I. Sonodynamic Therapy: Advances and Challenges in Clinical Translation. Journal of Ultrasound in Medicine, October, 2018.

5. **Lafond M**, Watanabe A, Yoshizawa S, Umemura S-I, Tachibana K. Cavitation-threshold Determination and Rheological-parameters Estimation of Albumin-stabilized Nanobubbles, Scientific Reports, May, 2018.

6. Yura T, **Lafond M**, Yoshizawa S, Umemura S-I. Effect of annular focusing of ultrasound on rate of stone erosion using cavitation bubbles. Japanese Journal of Applied Physics, May, 2018

7. Ikeda H, Nagaoka R, **Lafond M**, Yoshizawa S, Iwasaki R, Maeda M, Umemura S-I, Saijo Y. Singular Value Decomposition of received Ultrasound Signal for Separation of Blood Flow and Cavitation. Japanese Journal of Applied Physics (Spotlights 2018), May, 2018.

8. Mashiko D, Nishitaka S, Iwasaki R, **Lafond M**, Yoshizawa S, Umemura S-I. Estimation of Sonodynamic Treatment Region with Sonochemiluminescence in Gel Phantom. Japanese Journal of Applied Physics, May, 2018.

9. **Lafond M**, Asquier N, Mestas J-L, Carpentier A, Umemura S-I, Lafon C. Evaluation of a Three Hydrophones Method for 2-Dimensional Cavitation Localization. IEEE Transactions On Ultrasonics Ferroelectrics and Frequency Control, April, 2018.

10. **Lafond M**, Aptel F, Mestas J-L, Lafon C. Ultrasound-Mediated Ocular Delivery of Therapeutic Material: a Review. Expert Opinion on Drug Delivery, April, 2017.

11. **Lafond M**, Prieur F, Chavrier F, Mestas J-L, Lafon C. Numerical study of an Ultrasonic Confocal Setup for Cavitation Applications. Journal of the Acoustical Society of America, March, 2017.

12. Chettab K, Mestas J-L, **Lafond M**, Djamel E, Dumontet C, High Doxorubicin Delivery into Tumor Cells by Ultrasound Without Contrast Agents, Molecular Pharmaceutics, January, 2017.

13. **Lafond M**, Mestas J-L, Prieur F, Chettab K, Geraci S, Clézardin P, Lafon C. Unseeded Inertial Cavitation for Enhancing the Delivery of Chemotherapies: A Safety Study. Ultrasound in Medicine and Biology, January, 2016.

14. Prieur F, Pillon A, Mestas J-L, Cartron V, Cèbe P, Chansard N, **Lafond M**, Lafon C. Enhancement of Fluorescent Probe Penetration into Tumors *In Vivo* Using Unseeded Inertial Cavitation. Ultrasound in Medicine and Biology, Available online, April, 2016.

15. Chettab K, Roux S, Mathé D, Cros-Perrial E, **Lafond M**, Lafon C, Dumontet C, Mestas J-L. Spatial and Temporal Control of Cavitation Allows High In Vitro Transfection Efficiency in the Absence of Transfection Reagents or Contrast Agents. Plos One, August, 2015.

16. Prieur F, Zorgani A, Catheline S, Souchon R, Mestas J-L, **Lafond M**, Lafon C. Observation of a cavitation cloud in tissue using correlation between ultrafast ultrasound images, IEEE Transactions On Ultrasonics Ferroelectrics and Frequency Control, July, 2015

Patents

Lafon C, **Lafond M**, Mestas J-L, Umemura SI, Method and system for localizing a region of interest in a medium in which cavitation occurs, WO 2018/037130 Al

Presentations

1. **Lafond M**, Shekhar H, Salido N, Haworth KJ, Hannah A, Genstler C, Holland CK**,** Cavitation nucleation by definity® infused through an ekosonic® catheter. 19th International Symposium on Therapeutic Ultrasound, Barcelona, Spain, 2019

2. Salido NG, **Lafond M**, Haworth KJ, Holland CK, Frequency-domain passive cavitation imaging with circular coherence factor. 19th International Symposium on Therapeutic Ultrasound, Barcelona, Spain, 2019

3. Ikeda H, Nagaoka R, **Lafond M**, Yoshizawa S, Iwasaki R, Maeda M, Umemura S-I, Saijo Y. Noise reduction of ultrasound imaging during cavitation-enhanced high-intensity focused ultrasound treatment. 18th International Symposium on Therapeutic Ultrasound, Nashville, USA, 2018

4. **Lafond M**, Asquier N, Mestas J-L, Yoshizawa S, Lafon C, Umemura SI, Evaluation of a Three Hydrophone-based Method for Cavitation Localization. Japanese Symposium on Therapeutic Ultrasound, Sapporo, Japan, 2017

5. **Lafond M**, Asquier N, Mestas J-L, Lafon C, Umemura SI, Evaluation of a Three Hydrophone-based Method for Cavitation Localization. International Symposium on Therapeutic Ultrasound, Nanjing, China, 2017

6. **Lafond M**, Fant C, Mestas J-L, Ngo J, Lafon C, Umemura SI, Controlled Unseeded Cavitation for the Potentiation of Doxorubicin. Japanese Symposium on Ultrasound Molecular Imaging and Therapy (超音波分子診断治療研究会), Fukuoka, Japan, 2017

7. **Lafond M**, Fant C, Ngo J, Mestas J-L, Lafon C, In vitro potentiation of doxorubicin by unseeded controlled stable cavitation. Recherche en Imagerie et Technologie pour la Santé (RITS), Lyon, France, 2017

8. **Lafond M**, Ngo J, Prieur F, Fant C, Rogez B, Mestas JL, Lafon C. Confocal ultrasonic setup for doxorubicin anti-tumor potentiation. 10th International Symposium on Medical Bio- and Nano-electronics, Sendai, Japan, 2016

9. **Lafond M**, Chavrier F, Prieur F, Mestas JL, Lafon C. Numerical study of a confocal ultrasonic setup for creation of cavitation. 20th International Symposium of Nonlinear Acoustics, Lyon, France, 2015

10. **Lafond M**, Mestas JL, Prieur F, Chettab K, Clézardin P, Lafon C. Unseeded inertial cavitation for enhancing the delivery of chemotherapies: a safety study. 15th International Symposium on Therapeutic Ultrasound (ISTU 2015), Utrecht, The Netherlands, 2015

11. **Lafond M**, Mestas JL, Prieur F, Chettab K, Clézardin P, Lafon C. Evaluation of eventual risks of unseeded inertial cavitation for enhancing the delivery of chemotherapies. Recherche en Imagerie et Technologie pour la Santé (RITS), Dourdan, France, 2015

12. **Lafond M**, Fowler RA, Chavrier F, Mestas JL, Prieur F, Lafon C. Properties of a confocal setup versus a single transducer for cavitation creation. 14th International Symposium on Therapeutic Ultrasound, Las Vegas, USA, 2014

Invited presentations

1. **Lafond M**, Fant C, Mestas J-L, Ngo J, Lafon C, Umemura SI, Controlled Unseeded Cavitation for the Potentiation of Doxorubicin. 56th Japanese Congress of Biomedical Engineering (第56回日本生体医工学会大会), Sendai, Japan, 2017

Honors and awards

1. Best Paper Award (Symposium on Ultrasonic Electronics): Ikeda H, Nagaoka R, **Lafond M**, Yoshizawa S, Iwasaki R, Maeda M, Umemura S-I, Saijo Y. Singular Value Decomposition of received Ultrasound Signal for Separation of Blood Flow and Cavitation. Japanese Journal of Applied Physics, 2018.

2. R.W.B. Stephens PRIZE Honorable Mention: Yura T, **Lafond M**, Yoshizawa S, Umemura S-I. Effect of focal shape control on stone erosion rate using cavitation bubbles, International Congress on Ultrasonics, Honolulu, Hawaii, 2017.

3. Young Scientist Award from the French Society of Biomedical Research. Co-attributed to **Lafond M** and Fant C for the work: **Lafond M**, Fant C, Ngo J, Mestas J-L, Lafon C**,** In vitro potentiation of doxorubicin by unseeded controlled stable cavitation

Grants

Short-term JSPS Post-doctoral fellowship, Japanese Society for the promotion of Science: grant including 12 months salary and $8,400 research funds. Acceptance rate 15%, 2017

International Mobility Grant, Programme d'Avenir Lyon Saint-Etienne: grant for three months internship in the Umemura-Yoshizawa laboratory, Tohoku University, Japan. $2,500, acceptance rate 10%, 2016

Doctoral Fellowship Grant, Interdisciplinary Doctoral School of Health and Sciences (EDISS, Lyon, France). Acceptance rate 30%, 2013