

GWENAEL LAYEC

Department of Kinesiology
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CURRENT POSITION

Assistant Professor

University of Massachusetts – Department of Kinesiology in the School of Public Health and Health Sciences
Institute for Applied Life Sciences (IALS)
Amherst, Massachusetts

EDUCATION

Université de la Méditerranée, Marseille (France) - 2008

PhD in Human Movement Science, Physiology.

Areas of Specialization: muscle bioenergetics and magnetic resonance spectroscopy and imaging

Dissertation title: Combined investigation of muscle energetics in human: exercise standardisation and energy cost factors

Advisor: D. Bendahan

Université Montpellier I, Montpellier (France) – 2004

MS in Human Movement Science, Physiology.

Areas of Specialization: muscle metabolism and exercise physiology

PROFESSIONAL EXPERIENCE

2004/10-2008/12	PhD student, CRMBM, UMR CNRS 6612, Marseille, France
2009/9-2010/2	ATER (lecturer), University of Méditerranée, Marseille, France
2010/3-2013/10	Post-Doctoral Fellow, University of Utah, Salt Lake City, USA
2013/11-2015/6	Research Associate, University of Utah, Salt Lake City, USA
2015/7-2018/8	Assistant Professor of Medicine, University of Utah Salt Lake City, USA
2016/11-2018/8	Adjunct Assistant Professor, Department of Nutrition and Integrative Physiology, University of Utah, Salt Lake City, USA
2017/9-2018/8	Adjunct Assistant Professor, Department of Radiology, University of Utah, Salt Lake City, USA

SCHOLARSHIPS, AWARDS AND PROFESSIONAL MEMBERSHIPS

2003-2004	M.S. supported by academic scholarship (Languedoc-Roussillon)
2009	Best Ph.D. Thesis, University of Méditerranée, Marseille,
2010	Educational Stipend, International Society for Magnetic Resonance in Medicine
2015	Best Presentation award, Mitochondrial Physiology workshop, Copenhagen, Denmark,
2016	New Investigator award, Environmental & Exercise Physiology (EEP) section of the American Physiological Society (APS)
2010 - 2012	Member, International Society of Magnetic Resonance in Medicine

Gwenael Layec, *curriculum vitae*

2011-2014 Member, American College of Sports Medicine
2014-2015 Member, American Heart Association
2015-present Member, American Physiological Society

PUBLICATIONS (53 publications, 26 as 1st author)

1. Trinity, JD, Layec, G, Hart, CR, Richardson, RS: Sex-specific impact of aging on the blood pressure response to exercise. *American journal of physiology Heart and circulatory physiology*, 314: H95-H104, 2018.
2. Layec, G, Trinity, JD, Hart, CR, Le Fur, Y, Zhao, J, Reese, V, Jeong, EK, Richardson, RS: Impaired muscle efficiency but preserved peripheral hemodynamics and mitochondrial function with advancing age: Evidence from exercise in the young, old, and oldest-old. *The journals of gerontology*, 2018.
3. Hart, CR, Layec, G, Trinity, JD, Le Fur, Y, Gifford, JR, Clifton, HL, Richardson, RS: Oxygen availability and skeletal muscle oxidative capacity in patients with peripheral arterial disease: Implications from in vivo and in vitro assessments. *American journal of physiology Heart and circulatory physiology*, 2018.
4. Hart, CR, Layec, G, Trinity, JD, Kwon, OS, Zhao, J, Reese, VR, Gifford, JR, Richardson, RS: Increased skeletal muscle mitochondrial free radical production in peripheral arterial disease despite preserved mitochondrial respiratory capacity. *Experimental physiology*, 103: 838-850, 2018.
5. Gifford, JR, Trinity, JD, Kwon, OS, Layec, G, Garten, RS, Park, SY, Nelson, AD, Richardson, RS: Altered skeletal muscle mitochondrial phenotype in COPD: disease vs. disuse. *J Appl Physiol (1985)*, 124: 1045-1053, 2018.
6. Broxterman, RM, Hureau, TJ, Layec, G, Morgan, DE, Bledsoe, AD, Jessop, JE, Amann, M, Richardson, RS: Influence of group III/IV muscle afferents on small muscle mass exercise performance: a bioenergetics perspective. *The Journal of physiology*, 596: 2301-2314, 2018.
7. Venturelli, M, Layec, G, Trinity, J, Hart, CR, Broxterman, RM, Richardson, RS: Single passive leg movement-induced hyperemia: a simple vascular function assessment without a chronotropic response. *J Appl Physiol (1985)*, 122: 28-37, 2017.
8. Layec, G, Hart, CR, Trinity, JD, Kwon, OS, Rossman, MJ, Broxterman, RM, Le Fur, Y, Jeong, EK, Richardson, RS: Oxygen delivery and the restoration of the muscle energetic balance following exercise: implications for delayed muscle recovery in patients with COPD. *American journal of physiology Endocrinology and metabolism*, 313: E94-E104, 2017.
9. Broxterman, RM, Layec, G, Hureau, TJ, Morgan, DE, Bledsoe, AD, Jessop, JE, Amann, M, Richardson, RS: Bioenergetics and ATP Synthesis during Exercise: Role of Group III/IV Muscle Afferents. *Medicine and science in sports and exercise*, 49: 2404-2413, 2017.
10. Broxterman, RM, Layec, G, Hureau, TJ, Amann, M, Richardson, RS: Skeletal muscle bioenergetics during all-out exercise: mechanistic insight into the oxygen uptake slow component and neuromuscular fatigue. *J Appl Physiol (1985)*, 122: 1208-1217, 2017.
11. Trinity, JD, Wray, DW, Witman, MA, Layec, G, Barrett-O'Keefe, Z, Ives, SJ, Conklin, JD, Reese, V, Zhao, J, Richardson, RS: Ascorbic acid improves brachial artery vasodilation during progressive handgrip exercise in the elderly through a nitric oxide-mediated mechanism. *American journal of physiology Heart and circulatory physiology*, 310: H765-774, 2016.
12. Park, SY, Ives, SJ, Gifford, JR, Andtbacka, RH, Hyngstrom, JR, Reese, V, Layec, G, Bharath, LP, Symons, JD, Richardson, RS: Impact of age on the vasodilatory function of human skeletal muscle feed arteries. *American journal of physiology Heart and circulatory physiology*, 310: H217-225, 2016.
13. Layec, G, Trinity, JD, Hart, CR, Le Fur, Y, Sorensen, JR, Jeong, EK, Richardson, RS: Evidence of a metabolic reserve in the skeletal muscle of elderly people. *Aging*, 9: 52-67, 2016.
14. Layec, G, Gifford, JR, Trinity, JD, Hart, CR, Garten, RS, Park, SY, Le Fur, Y, Jeong, EK, Richardson, RS: Accuracy and precision of quantitative ³¹P-MRS measurements of human skeletal muscle mitochondrial function. *American journal of physiology Endocrinology and metabolism*, 311: E358-366, 2016.
15. Layec, G, Bringard, A, Le Fur, Y, Micallef, JP, Vilmen, C, Perrey, S, Cozzone, PJ, Bendahan, D: Mitochondrial Coupling and Contractile Efficiency in Humans with High and Low V O₂ peaks. *Medicine and science in sports and exercise*, 48: 811-821, 2016.
16. Gifford, JR, Garten, RS, Nelson, AD, Trinity, JD, Layec, G, Witman, MA, Weavil, JC, Mangum, T, Hart, C, Etheredge, C, Jessop, J, Bledsoe, A, Morgan, DE, Wray, DW, Rossman, MJ, Richardson, RS: Symmorphosis and skeletal muscle VO₂ max : in vivo and in vitro measures reveal differing constraints in the exercise-trained and untrained human. *The Journal of physiology*, 594: 1741-1751, 2016.

17. Trinity, JD, Groot, HJ, Layec, G, Rossman, MJ, Ives, SJ, Morgan, DE, Gmelch, BS, Bledsoe, A, Richardson, RS: Passive leg movement and nitric oxide-mediated vascular function: the impact of age. *American journal of physiology Heart and circulatory physiology*, 308: H672-679, 2015.
18. Richardson, RS, Wary, C, Wray, DW, Hoff, J, Rossiter, HB, Layec, G, Carlier, PG: MRS Evidence of Adequate O₂ Supply in Human Skeletal Muscle at the Onset of Exercise. *Medicine and science in sports and exercise*, 47: 2299-2307, 2015.
19. Richardson, RS, Wary, C, Wray, DW, Hoff, J, Rossiter, HB, Layec, G, Carlier, PG: Response. *Medicine and science in sports and exercise*, 47: 2481-2482, 2015.
20. Layec, G, Trinity, JD, Hart, CR, Kim, SE, Groot, HJ, Le Fur, Y, Sorensen, JR, Jeong, EK, Richardson, RS: Impact of age on exercise-induced ATP supply during supramaximal plantar flexion in humans. *American journal of physiology*, 309: R378-388, 2015.
21. Layec, G, Hart, CR, Trinity, JD, Le Fur, Y, Jeong, EK, Richardson, RS: Skeletal muscle work efficiency with age: the role of non-contractile processes. *Clin Sci (Lond)*, 128: 213-223, 2015.
22. Layec, G, Bringard, A, Le Fur, Y, Micallef, JP, Vilmen, C, Perrey, S, Cozzone, PJ, Bendahan, D: Opposite effects of hyperoxia on mitochondrial and contractile efficiency in human quadriceps muscles. *American journal of physiology*, 308: R724-733, 2015.
23. Hart, CR, Layec, G, Trinity, JD, Liu, X, Kim, SE, Groot, HJ, Le Fur, Y, Sorensen, JR, Jeong, EK, Richardson, RS: Evidence of Preserved Oxidative Capacity and Oxygen Delivery in the Plantar Flexor Muscles With Age. *The journals of gerontology*, 70: 1067-1076, 2015.
24. Groot, HJ, Trinity, JD, Layec, G, Rossman, MJ, Ives, SJ, Morgan, DE, Bledsoe, A, Richardson, RS: The role of nitric oxide in passive leg movement-induced vasodilatation with age: insight from alterations in femoral perfusion pressure. *The Journal of physiology*, 593: 3917-3928, 2015.
25. Groot, HJ, Rossman, MJ, Trinity, JD, Layec, G, Ives, SJ, Richardson, RS: Passive leg movement-induced vasodilation in women: the impact of age. *American journal of physiology Heart and circulatory physiology*, 309: H995-H1002, 2015.
26. Gifford, JR, Trinity, JD, Layec, G, Garten, RS, Park, SY, Rossman, MJ, Larsen, S, Dela, F, Richardson, RS: Quadriceps exercise intolerance in patients with chronic obstructive pulmonary disease: the potential role of altered skeletal muscle mitochondrial respiration. *J Appl Physiol (1985)*, 119: 882-888, 2015.
27. Venturelli, M, Amann, M, Layec, G, McDaniel, J, Trinity, JD, Fjeldstad, AS, Ives, SJ, Yonnet, G, Richardson, RS: Passive leg movement-induced hyperaemia with a spinal cord lesion: evidence of preserved vascular function. *Acta physiologica (Oxford, England)*, 210: 429-439, 2014.
28. Trinity, JD, Layec, G, Lee, JF: Heterogeneity of blood flow: impact of age on muscle specific tissue perfusion during exercise. *The Journal of physiology*, 592: 1729-1730, 2014.
29. Trinity, JD, Groot, HJ, Layec, G, Rossman, MJ, Ives, SJ, Richardson, RS: Impact of age and body position on the contribution of nitric oxide to femoral artery shear rate: implications for atherosclerosis. *Hypertension*, 63: 1019-1025, 2014.
30. Layec, G, Venturelli, M, Jeong, EK, Richardson, RS: The validity of anthropometric leg muscle volume estimation across a wide spectrum: from able-bodied adults to individuals with a spinal cord injury. *J Appl Physiol (1985)*, 116: 1142-1147, 2014.
31. Layec, G, Trinity, JD, Hart, CR, Kim, SE, Groot, HJ, Le Fur, Y, Sorensen, JR, Jeong, EK, Richardson, RS: In vivo evidence of an age-related increase in ATP cost of contraction in the plantar flexor muscles. *Clin Sci (Lond)*, 126: 581-592, 2014.
32. Donato, AJ, Henson, GD, Hart, CR, Layec, G, Trinity, JD, Bramwell, RC, Enz, RA, Morgan, RG, Reihl, KD, Hazra, S, Walker, AE, Richardson, RS, Lesniewski, LA: The impact of ageing on adipose structure, function and vasculature in the B6D2F1 mouse: evidence of significant multisystem dysfunction. *The Journal of physiology*, 592: 4083-4096, 2014.
33. Trinity, JD, Wray, DW, Witman, MA, Layec, G, Barrett-O'Keefe, Z, Ives, SJ, Conklin, JD, Reese, V, Richardson, RS: Contribution of nitric oxide to brachial artery vasodilation during progressive handgrip exercise in the elderly. *American journal of physiology*, 305: R893-899, 2013.
34. Layec, G, Trinity, JD, Hart, CR, Hopker, J, Passfield, L, Coen, PM, Conley, KE, Hunter, GR, Fisher, G, Ferguson, RA, Sasaki, K, Malatesta, D, Maffiuletti, NA, Borrani, F, Minetti, AE, Rice, CL, Dalton, BH, McNeil, CJ, Power, GA, Manini, TM: Comments on point:counterpoint: skeletal muscle mechanical efficiency does/does not increase with age. *J Appl Physiol (1985)*, 114: 1114-1118, 2013.

35. Layec, G, Malucelli, E, Le Fur, Y, Manners, D, Yashiro, K, Testa, C, Cozzone, PJ, Iotti, S, Bendahan, D: Effects of exercise-induced intracellular acidosis on the phosphocreatine recovery kinetics: a ³¹P MRS study in three muscle groups in humans. *NMR in biomedicine*, 26: 1403-1411, 2013.
36. Layec, G, Haseler, LJ, Trinity, JD, Hart, CR, Liu, X, Le Fur, Y, Jeong, EK, Richardson, RS: Mitochondrial function and increased convective O₂ transport: implications for the assessment of mitochondrial respiration in vivo. *J Appl Physiol (1985)*, 115: 803-811, 2013.
37. Layec, G, Haseler, LJ, Richardson, RS: Reduced muscle oxidative capacity is independent of O₂ availability in elderly people. *Age (Dordrecht, Netherlands)*, 35: 1183-1192, 2013.
38. Layec, G, Haseler, LJ, Hoff, J, Hart, CR, Liu, X, Le Fur, Y, Jeong, EK, Richardson, RS: Short-term training alters the control of mitochondrial respiration rate before maximal oxidative ATP synthesis. *Acta physiologica (Oxford, England)*, 208: 376-386, 2013.
39. Layec, G, Hart, CR, Trinity, JD, Richardson, RS: Commentary on: an (un)paralleled process? *Experimental physiology*, 98: 1325, 2013.
40. Groot, HJ, Trinity, JD, Layec, G, Rossman, MJ, Ives, SJ, Richardson, RS: Perfusion pressure and movement-induced hyperemia: evidence of limited vascular function and vasodilatory reserve with age. *American journal of physiology Heart and circulatory physiology*, 304: H610-619, 2013.
41. Amann, M, Venturelli, M, Ives, SJ, McDaniel, J, Layec, G, Rossman, MJ, Richardson, RS: Peripheral fatigue limits endurance exercise via a sensory feedback-mediated reduction in spinal motoneuronal output. *J Appl Physiol (1985)*, 115: 355-364, 2013.
42. Trinity, JD, Groot, HJ, Layec, G, Rossman, MJ, Ives, SJ, Runnels, S, Gmelch, B, Bledsoe, A, Richardson, RS: Nitric oxide and passive limb movement: a new approach to assess vascular function. *The Journal of physiology*, 590: 1413-1425, 2012.
43. Layec, G, Richardson, RS: Training to improve performance: one leg at a time. *Acta physiologica (Oxford, England)*, 205: 186-188, 2012.
44. Layec, G, Haseler, LJ, Richardson, RS: The effect of higher ATP cost of contraction on the metabolic response to graded exercise in patients with chronic obstructive pulmonary disease. *J Appl Physiol (1985)*, 112: 1041-1048, 2012.
45. Layec, G, Bringard, A, Yashiro, K, Le Fur, Y, Vilmen, C, Micallef, JP, Perrey, S, Cozzone, PJ, Bendahan, D: The slow components of phosphocreatine and pulmonary oxygen uptake can be dissociated during heavy exercise according to training status. *Experimental physiology*, 97: 955-969, 2012.
46. Bringard, A, Layec, G, Micallef, JP, Bendahan, D, Perrey, S: Gas exchange measurements within a magnetic environment: validation of a new system. *Respiratory physiology & neurobiology*, 182: 37-46, 2012.
47. Layec, G, Haseler, LJ, Hoff, J, Richardson, RS: Evidence that a higher ATP cost of muscular contraction contributes to the lower mechanical efficiency associated with COPD: preliminary findings. *American journal of physiology*, 300: R1142-1147, 2011.
48. Layec, G, Bringard, A, Le Fur, Y, Vilmen, C, Micallef, JP, Perrey, S, Cozzone, PJ, Bendahan, D: Comparative determination of energy production rates and mitochondrial function using different ³¹P MRS quantitative methods in sedentary and trained subjects. *NMR in biomedicine*, 24: 425-438, 2011.
49. Layec, G, Bringard, A, Vilmen, C, Micallef, JP, Le Fur, Y, Perrey, S, Cozzone, PJ, Bendahan, D: Does oxidative capacity affect energy cost? An in vivo MR investigation of skeletal muscle energetics. *European journal of applied physiology*, 106: 229-242, 2009.
50. Layec, G, Bringard, A, Le Fur, Y, Vilmen, C, Micallef, JP, Perrey, S, Cozzone, PJ, Bendahan, D: Effects of a prior high-intensity knee-extension exercise on muscle recruitment and energy cost: a combined local and global investigation in humans. *Experimental physiology*, 94: 704-719, 2009.
51. Layec, G, Bringard, A, Le Fur, Y, Vilmen, C, Micallef, JP, Perrey, S, Cozzone, PJ, Bendahan, D: Reproducibility assessment of metabolic variables characterizing muscle energetics in vivo: A ³¹P-MRS study. *Magn Reson Med*, 62: 840-854, 2009.
52. Layec, G, Millet, GP, Jougla, A, Micallef, JP, Bendahan, D: Electrostimulation improves muscle perfusion but does not affect either muscle deoxygenation or pulmonary oxygen consumption kinetics during a heavy constant-load exercise. *European journal of applied physiology*, 102: 289-297, 2008.
53. Layec, G, Bringard, A, Vilmen, C, Micallef, JP, Fur, YL, Perrey, S, Cozzone, PJ, Bendahan, D: Accurate work-rate measurements during in vivo MRS studies of exercising human quadriceps. *Magma (New York, NY)*, 21: 227-235, 2008.

CHAPTER (1)

Layec, G., P.J. Cozzone., and D. Bendahan. Chapter 4, section 1:" A non invasive investigation of training-induced metabolic changes. Exercise Physiology : from a cellular to an integrative approach. Connes P, Hue O, Perrey S. Ed. IOS Press. 2010

OTHER (1)

Editorial Podcast in Clinical Science:

<https://soundcloud.com/portlandpress/gwenaellayecpodcast>

Ad Hoc REVIEWER

Journal of Physiology, Clinical Science, Applied Physiology, Nutrition and Metabolism, Biochimica et Biophysica Acta, Journal of Applied Physiology, American Journal of Physiology, European Biophysics Letter, Acta Physiologica, Medecine Sport Science and Exercise, Plos One, NMR in biomedicine, Magnetic Resonance in Medicine, Magnetic Resonance Materials in Physics, Biology and Medicine, European Journal of Applied Physiology, European Respiratory Journal

INVITED LECTURES

Department/Division Conferences

- 2007 **Layec G.** *Noninvasive investigations of the metabolic effects and electromyographic changes in tissue oxygenation on muscle function* [Explorations non invasives des effets métaboliques et électromyographiques des variations de l'oxygénation tissulaire sur la fonction musculaire], Journée de la recherche clinique [Clinical Research Day], University of the Mediterranean, Marseille, France
- 2009 **Layec G.** Exploration non-invasive du métabolisme énergétique à l'exercice chez l'homme [Non-invasive exploration of energy metabolism in exercise in humans]. University of Montpellier, Montpellier, France
- 2016 **Layec G.** Metabolic abnormalities with COPD: is it only physical deconditioning ? UVRL and ESS Department colloquium, University of Utah.
- 2017 **Layec G.** Physiological Factors Contributing to the Age-Related Decline in Walking Speed and Prospective Counter-Measures. Division of Geriatrics, University of Utah,
- 2017 **Layec G & EK Jeong.** Using Magnetic Resonance Spectroscopy to assess muscle oxygenation and metabolism in patients with COPD. Department of Radiology and Imaging Sciences. University of Utah
- 2017 **Layec G.** Is skeletal muscle metabolism and O₂ availability impaired in patients with COPD? Insight from in vivo MR spectroscopy. Center for Diabetes and Metabolism. University of Utah.
- 2017 **Layec G.** Peripheral dysfunction and prospective treatment in patients with COPD. UMASS Amherst.
- 2017 **Layec G.** Peripheral dysfunction and BH₄ treatment in patients with COPD. Virginia Commonwealth University.
- 2018 **Layec G.** Effects of an acute supplementation in tetrahydrobiopterin on peripheral vascular function and skeletal muscle metabolism in patients with COPD. Department of Pulmonary and Critical Care Medicine. University of Utah.

ORAL PRESENTATIONS

Meeting Presentations

International

- 2008 **Layec G.** Effects of a prior high-intensity knee-extension exercise on muscle recruitment and energy cost: a combined local and global investigation.

- European Society for Magnetic Resonance in Medicine and Biology 25th Annual Scientific Meeting, Valencia, Spain
- 2008 **Layec G.** Does oxidative capacity affect energy cost? An in vivo MR investigation of skeletal muscle energetics. European Society for Magnetic Resonance in Medicine and Biology 25th Annual Scientific Meeting, Valencia, Spain
- 2008 **Layec G.** Accurate work-rate measurements during in vivo MRS studies of human quadriceps exercising muscle. European Society for Magnetic Resonance in Medicine and Biology 25th Annual Scientific Meeting, Valencia, Spain
- 2009 **Layec G.** The effect of physical status on phosphocreatine and pulmonary oxygen consumption kinetics during exercise: a combined pulmonary gas exchange and ³¹P-MRS study. 14th Annual Congress of the European College of Sport Science - ECSS Oslo 2009, Oslo, Norway
- 2009 **Layec G.** Comparative determination of oxidative ATP production and energy cost using different methods in sedentary and trained subjects. European Society for Magnetic Resonance in Medicine and Biology 26th Annual Scientific Meeting, Antalya, Turkey
- 2015 **Layec G.** Validation of quantitative ³¹P-MRS measurements of human skeletal muscle mitochondrial function. Mitochondrial Physiology workshop, Copenhagen, Denmark. *Best Presentation award.*
- National
- 2007 **Layec G.** A non-invasive and integrated approach of muscle function in humans [Une approche non invasive et intégrée de la fonction musculaire chez l'homme]. Young Researchers Colloquium, French Muscular Dystrophy Association [Colloque Jeunes chercheurs, Association Française contre les Myopathies], Evry, France
- 2008 **Layec G.** In vivo study of the effects of oxidative capacity of the energy cost and ATP production during intense exercise: combined analysis of SRM P31, surface electromyography and measurement of respiratory exchanges [Etude in vivo des effets de la capacité oxydative sur le coût énergétique et la production d'ATP au cours d'un exercice intense: analyse combinée par SRM du P31, électromyographie de surface et mesure des échanges respiratoires]. Congress of the Research Group on Applications of Magnetism in Medicine [Congrès du Groupe de Recherche sur les Applications du Magnétisme en Médecine (GRAMM)], Lyon, France
- 2009 **Layec G.** Does oxidative capacity affect energy cost? An in vivo MR investigation of skeletal muscle energetics. Congress of the French Society of Physiology [Congrès de la Société Française de Physiologie] (P2T), Marseille, France
- 2015 **Layec G.** Muscle efficiency during small muscle mass exercise across the lifespan. South Western American College of Sports and Medicine (SWACSM). Orange County, USA

TEACHING EXPERIENCE

- 2005: Biostatistics for undergraduate and master students, Université de la Méditerranée, Marseille
- 2006: Biostatistics for master students, Université de la Méditerranée, Marseille
- 2009: Biostatistics for master students, Université de la Méditerranée, Marseille
- 2009: Biostatistics for undergraduate students, Université de la Méditerranée, Marseille
- 2009: Human Bioenergetics for undergraduate students, Université de la Méditerranée, Marseille
- 2009: Cardiovascular physiology for undergraduate students, Université de la Méditerranée, Marseille

RESEARCH SUPPORT

Gwenaél Layec, *curriculum vitae*

Active Research Support

K99/R00 HL125756-02 Layec (PI) 09/01/15 - 08/30/2021
NIH - National Heart, Lung and Blood Institute
Nitric oxide coupling and BH4 availability roles in muscle dysfunction with COPD

Young Clinical Scientist Award Layec (PI) 07/01/15 - 06/30/2019
Flight Attendant Medical Research Institute
Role of Nitric oxide coupling in peripheral dysfunction with COPD

R01 Lei Zhang (PI) 10/01/16 - 09/30/2020
NIH – National Institute of Biomedical Imaging and Bioengineering
Stress-rest calf muscle perfusion: a functional diagnostic test for peripheral arterial disease (PAD)
Role: Co-Investigator

Past Research Support

Seed development grant Layec (PI) 03/01/16 - 02/28/2017
University of Utah – Diabetes and Metabolism Center
Novel multinuclear MRS evaluation of human skeletal muscle mitochondrial function

Seed grant Richardson (PI) 06/01/2010 - 12/31/2010
“Understanding skeletal muscle limited rehabilitation in Chronic Obstructive Pulmonary Disease”
UCAIR and Brain Institute
Role: Co-Investigator

Doctoral Fellowship Layec 01/01/2006 - 06/30/2009
Oxygen availability and the corresponding modulation of muscle energetics and electrical activity: A combined investigation using ³¹P Magnetic resonance spectroscopy, gas exchange measurements, near infrared spectroscopy and surface electromyography
AFM (Association Francaise contre les Myopathies)

Doctoral support Layec 6/01/2005 - 12/31/2005
Oxygen availability and the corresponding modulation of muscle energetics and electrical activity: A combined investigation using ³¹P Magnetic resonance spectroscopy, gas exchange measurements, near infrared spectroscopy and surface electromyography
ADEREM