Luke Marney

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Profile

Analytical chemistry expert in laboratory medicine, separation science, and scientific computing

Education

Ph. D. of Chemistry, University of Washington	June 2013
Master of Science in Laboratory Medicine, University of Washington	June 2010
Bachelor of Science in Chemistry, Central Washington University	March 2007
Associate of Medical Laboratory Technology, Wenatchee Valley College	August 2004

Employment and Awards

Lecturer — September 2015 - Present
Seattle University

Investigator Scientist — October 2013 - March 2015
Medical Research Council – Human Nutrition Research

*Recipient of an MRC Special Award Scheme Award — May 2014 and March 2015
*Nominated for CEO Rising Star Award — June 2014

Teaching Supervisions — October 2014 – December 2014
Kings College, University of Cambridge

Lecturer — June 2013 –July 2013
University of Washington Department of Chemistry

Teaching and Research Assistantship — September 2008 – June 2013
University of Washington Department of Chemistry

Medical Laboratory and X-ray Technician, — September 2004 - March 2007
Central Washington University Student Health Center

Teaching

Supervisions for Kings College: University of Cambridge (1A Level Chemistry)
Quantitative Analysis Lecturer: University of Washington
Separation science, quantitative and general chemistry TA: University of Washington
Medical technologist laboratory manual method development: University of Washington
Organic chemistry TA: Central Washington University

Biography

Luke is a clinical laboratory scientist and chemist that distills his erudite vision and calm, zen-like passion into creating new inspired connections of great minds and new ideas. While doing yoga, exploring the outdoors and playing music, his unique innovative creativity for scientific investigation accumulates. That creativity is channelled into teaching, exploring complex ideas, finding the path of least resistance and going after results in a smart way--be it analysis, communication, or engineering.

Programming Knowledge in Windows, Mac OS, and Linux

Luke has fundamental scientific research expertise in the languages Python, R, and MATLAB/Octave and continues to contribute to projects for chromatography and mass spectrometry data analysis.

Research Summary

Luke's research program investigates fundamental biology and pathophysiology of metabolic and cardiovascular disease with the development of chemical separation methods and the accompanied data analysis tools. The most effective instrumental techniques for these aims has been chromatography and mass spectrometry and the development of reproducible, better resolving, and faster methods to quantify ever increasing numbers of chemical components. This fundamental interest in chemical separation is applied primarily to the measurement of key biochemical components that are important for the investigation of the pathophysiology of metabolic disease in the clinical laboratory, in animal models of disease, and in molecular epidemiology. The three-pronged application of this interest is critical for the future effective transformation of community and personalized medicine with high-powered instrumental and data analysis techniques.

Publications

"Mechanistic Insights Revealed by Lipid Profiling in Monogenic Insulin Resistance Syndromes," Eiden, M., Koulman, A., Hatunic, M., West, J., Murfitt, S., Osei, M., Adams, C., Wang, X., **Marney, L.**, Chu, Y., Roberts, L., O'Rahilly, S., Semple, R., Savage, D., Griffin, J. Diabetologia, *in review*

"Tile-Based Fisher Ratio Analysis of Comprehensive Two-Dimensional Gas Chromatography Time-of-Flight Mass Spectrometry (GC × GC – TOFMS) Data using a Null Distribution Approach," Parsons, B., **Marney, L**., Siegler, W. C., Hoggard, J., Wright, B., Synovec, R., *Analytical Chemistry,* 87(7), 3812–3819 (2015)

"Metabolomic biomarkers of hypoxic ischemic encephalopathy in a nonhuman primate model," Chun, P., McPherson, R., **Marney, L.**, Zangeneh, S., Parsons, B., Shojaie, A., Synovec, R., Juul, S. Developmental Neuroscience, *accepted not yet published*

"Methods of Discovery-Based and Targeted Metabolite Analysis by Comprehensive Two-Dimensional Gas Chromatography with Time-of-Flight Mass Spectrometry Detection," **L. C. Marney**, J. C. Hoggard, K. J. Skogerboe and R. E. Synovec, in Mass Spectrometry Methods in Metabolomics (D. Raftery, editor), Humana Press (Springer Group), USA, Chapter, accepted 2013. Invited Book Chapter

"Correlation of rocket propulsion fuel properties with chemical composition using comprehensive two-dimensional gas chromatography with time-of-flight mass spectrometry followed by partial least squares regression analysis," Kehimkar, B., Hoggard, J. C., **Marney, L. C.**, Billingsley, M. C., Fraga, C. G., Bruno, T. J., Synovec, R. E. *Journal of Chromatography A*, (2013)

"Tile-Based Fisher-Ratio Software for Improved Feature Selection Analysis of Comprehensive Two-Dimensional Gas Chromatography Time-of-Flight Mass Spectrometry Data." **Marney, L.**, Siegler, C., Parsons, B., Hoggard, J., Wright, B., Synovec, R. *TALANTA,* 115(15), 887–895 (2013)

"Sample Preparation Methodology for Mouse Heart Metabolomics using Comprehensive Two-Dimensional Gas Chromatography coupled with Time-of-Flight Mass Spectrometry." **Marney, L.**, Kolwicz, S., Tian, R., and Synovec, R. *TALANTA 108,* 123-130 (2013)

"Cardiac-Specific Deletion of Acetyl CoA Carboxylase 2 (ACC2) Prevents Metabolic Remodeling During Pressure-Overload Hypertrophy." Kolwicz, S. C., Olson, D. P., **Marney, L. C.**, Garcia-Menendez, L., Synovec, R. E., & Tian, R. *Circulation Research 111*(6),728-738 (2012).

"Review of Chemometric Analysis Techniques for Comprehensive Two-Dimensional Separations Data." Pierce, K. M., Kehimkar, B., **Marney, L. C.**, Hoggard, J. C., & Synovec, R. E. *Journal of Chromatography A 1255*, 3-11 (2012)

"Simultaneous quantification of apolipoprotein A-I and apolipoprotein B by liquid-chromatography-multiple-reaction-monitoring mass spectrometry." Agger, S. A., **Marney, L. C.**, & Hoofnagle, A. N. *Clinical chemistry*, *56*(12), 1804–1813 (2010)

"Isopropanol protein precipitation for the analysis of plasma free metanephrines by liquid chromatography-tandem mass spectrometry." **Marney, L. C.**, Laha, T. J., Baird, G. S., Rainey, P. M., & Hoofnagle, A. N. *Clinical chemistry*, *54*(10), 1729–1732 (2008)

Notable Presentations

"An Introduction to Metabolomics for Medicine and its Methods" Dr. Luke Marney, guest lecturer for Food and Nutrition seminar at the Department of Food and Nutritional Sciences, University of Reading

"Using comprehensive two-dimensional gas chromatography (GC x GC-TOFMS) for metabolomics" Synovec, R., Humston, E., Snyder, L., **Marney, L.**, Beckstrom, A., Viglino, E., Hoggard, J., McShea, A., Montine, T., Juul, S. Northwest Metabolomics Research Center Metabolomics Symposium (2012)

"Maintaining Cardiac Fatty Acid Oxidation in Pressure-Overload Hypertrophy Preserves Function and Energetics." Kolwicz, S. C., Olson, D. P., **Marney, L.**, Garcia-Menendez, L., Ngoy, S., Synovec, R. E., Liao, R., et al. *Circulation*, *124*(21) (2011) American Heart Association Scientific Sessions (2012)