

# Joe Dragavon, PhD

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BioFrontiers Advanced Light Microscopy Core  
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Languages: English, French

## Professional Experience

- 2014 – Present    **Director of the BioFrontiers Advanced Light Microscopy Core**  
University of Colorado, Boulder
- 2012-2014        **Post-Doctoral Research Fellow**  
Plate-Forme d’Imagerie Dynamique, Institut Pasteur, Paris, France  
Advisor: Spencer L. Shorte
- 2009-2011        **Pasteur Foundation Research Fellow: Gould Scholar**  
Plate-Forme d’Imagerie Dynamique, Institut Pasteur, Paris, France  
Advisor: Spencer L. Shorte
- 2007-2008        **Post-Doctoral Research Fellow**  
University of Hull, Hull, UK  
Advisor: Paul Watts

## Education

- 2006              **Ph.D. in Analytical Chemistry**, University of Washington  
Advisor: Lloyd Burgess  
Thesis: *Development of a Cellular Isolation System for Real-Time Single Cell Oxygen Consumption Monitoring*
- 2001              **Bachelors of Science**, University of Puget Sound  
Major: Chemistry

## Microscopy and Imaging Experience

- Expertise:                      Widefield: Zeiss; Nikon; Olympus  
Laser Scanning Confocal: Zeiss: LSM510, LSM510 META, LSM700; Leica: SP5;  
Nikon A1R  
Spinning Disk Confocal: PerkinElmer Volocity; Andor IQ, IQ2; Nikon SD  
Fluorescence Lifetime Imaging: Lambert Instruments, frequency domain; in-house developed  
systems for both frequency and time domains  
Bioluminescence Imaging: PerkinElmer: IVIS Lumina, IVIS 100, IVIS Spectrum;  
Olympus LV200; in-house developed systems for single cell  
bioluminescence imaging  
Fluorescence Molecular Tomography: PerkinElmer; in-house developed systems
- Competence/Familiarity:        TIRF: Olympus, Nikon  
Two-Photon: Zeiss LSM710  
STED: Leica, in-house developed systems  
STORM/PALM: Nikon NSTORM; In-house developed systems  
High-Content Screening: PerkinElmer Opera; Molecular Devices ImageExpress  
Software/Programming: ImageJ/Fiji, ICY, Huygens, Imaris, OME, Matlab,  
Labview, MicroManager

## Teaching and Course Development

- 2014 *Big Data and Image Analysis*  
Chem6711, University of Colorado, Boulder
- 2011 *Fluorescence by Unbound Excitation from Luminescence*  
European Molecular Biology Organisation Practical Course on Microscopy: From Single Cells to Animals, Council for Scientific and Industrial Research, Pretoria, South Africa
- 2010 *Microscopy: From Theory to Application - FRAP, FRET, and FLIM*  
Institut Pasteur, Paris, France
- 2006 ChemE 499A *Sustainable Development Independent Project for Seniors*  
University of Washington, Seattle, Washington

## Research Supervision

### Masters:

- 2012 Yesim Tüzün-Celotto, European Masters in Molecular Imaging.  
Thesis: *Investigating Fluorescence by Unbound Excitation from Luminescence on Whole-Mouse Cryosections.*  
Currently searching for a PhD position.
- 2011 Ioanna Theodorou, European Masters in Molecular Imaging.  
Thesis: *Fluorescence by Unbound Excitation from Luminescence (FUEL).*  
Currently pursuing a PhD under M. Frédéric Ducongé at the Commissariat à l'Énergie Atomique in Saclay, France.
- 2010 Megdouda Amiri, European Masters in Molecular Imaging.  
Thesis: *Fluorescence Lifetime Imaging to Quantify Sub-Cellular Oxygen Measurements in Live Macrophage during Bacterial Invasion.*  
Currently searching for a PhD position.

### Internships:

- 2013 Carolyn Sinow (Stanford University, 2014), The Pasteur Foundation of New York.  
Currently finishing her degree at Stanford University.
- 2010 Chelsea R. Samson (Biomedical Engineering, Vanderbilt University, 2011), The Pasteur Foundation of New York.  
Currently at Vanderbilt Medical School.
- 2009 Nicholas Perry (Human Biology, Stanford University, 2010), Paul W. Zuccaire Research Fellow and The Pasteur Foundation of New York.  
Currently a Forward Deployed Engineer for Palintir Technologies.

## Awarded Research Grants

<u>Grant Name</u>	<u>Start Date</u>	<u>Duration</u>	<u>Amount</u>
Pasteur Foundation	01/2009	3 years	\$225,000.00
CPAC Research Grant	07/2004	1 year	\$12,000.00
CPAC Research Grant	07/2003	1 year	\$12,000.00

## Conference Presentations

- SPIE BiOS, San Francisco, CA 2011
- 1<sup>st</sup> Scientific Workshop on Advanced Technologies for Life Science, Paris, France 2010
- Young Researchers in Life Science, Paris, France 2010
- Focus on Microscopy, Shanghai, China 2010
- CPAC Satellite Meeting, Rome, Italy 2006 – 2007

## Conference Presentations, continued

- AIChE National Meeting, San Francisco, CA 2006
- CPAC Summer Institute, Seattle, WA 2005 – 2006
- CPAC Semi-Annual Sponsor Meeting, Seattle, WA 2003 – 2006
- FACCS National Meeting, Portland, OR 2004

## External and International Recognition

- Pasteur Foundation Fellowship: Gould Scholar 2009 – 2011
- The Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) Poster Award 2004
- Center for Process Analytical Chemistry (CPAC) Poster Award 2004
- University of Washington Research Fellowship 2001 – 2002
- Murdoch Undergraduate Research fellowship 2000 – 2001

## Publications and Patents

Tournebize, R.; **Dragavon, J.**; Miller, A. D.; Shorte, S. Silencing the radicals improves Click Chemistry. **2014**, *Biotechnol J*, *9*, 595-6.

**Dragavon, J.\***; Sinow, C.; Holland, A. D.; Rekiki, A.; Theodorou, I.; Samson, C.; Blazquez, S.; Rogers, K. L.; Tournebize, R.; Shorte, S. L. A Step Beyond BRET: Fluorescence by Unbound Excitation from Luminescence (FUEL). **2014**, *J Vis Exp*, *87*.

Holland, A. D.; Ruckerl, F.; **Dragavon, J. M.**; Rekiki, A. R.; Tinevez, J.-Y.; Tournebize, R.; Shorte, S. L. In vitro Characterization of Fluorescence by Unbound Excitation from Luminescence: Broadening the Scope of Energy Transfer. **2014**, *Methods Mol Biol*, *1098*, 259-270.

**Dragavon, J.\***; Rekiki, A.; Theodorou, I.; Samson, C.; Blazquez, S.; Rogers, K. L.; Tournebize, R.; Shorte, S. L. In Vitro and In Vivo Demonstrations of Fluorescence by Unbound Excitation from Luminescence (FUEL). Christian E. Badr (ed.). **2014**, *Bioluminescent Imaging: Methods and Protocols*, Methods in Molecular Biology, *1098*, 259-270.

Holland, A. D.; **Dragavon, J. M.** Algal Reactor Design Based on Comprehensive Modeling of Light and Mixing. Rakesh Bajpai, Aleš Prokop, Mark Zappi (eds.). **2014**, *Algal Biorefineries Volume 1: Cultivation of Cells and Products*, 25-68.

Papal, S.; Cortese, M.; Legendre, K.; Soroush, N.; **Dragavon, J.**; Sahly, I.; Shorte, S.; Wolfrum, U.; Petit, C.; El-Amraoui, A. The Giant  $\beta$ V Couples the Molecular Motors to Phototransduction and Usher Syndrome Type I Proteins Along Their Trafficking Route. **2013**, *Hum Mol Genet*, *22*, 3773-3788.

**Dragavon, J.\***; Blazquez, S.; Rekiki, A.; Samson, C.; Theodorou, O.; Rogers, K.; Tournebize, R.; Shorte, S.\* In vivo Excitation of Nanoparticles Using Luminescent Bacteria. **2012**, *PNAS*, *109*, 8890-8895.

Tinevez, J.Y.; **Dragavon, J.**; Baba-Aissa, L.; Roux, P.; Perret, E.; Canivet, A.; Galy, V.; Shorte, S. A Quantitative Method for Measuring Phototoxicity of a Live Cell Imaging Microscope. **2012**, *Meth. Enzymol*, *506*, 291-309.

**Dragavon, J.**; Amiri, M.; Marteyn, B.; Sansonetti, P.; Shorte, S. Fluorescence Lifetime Imaging to Quantify Subcellular Oxygen Measurements in Live Macrophage During Bacterial Invasion. **2011**, *Proc. of SPIE*, *7910*, 791019-1-791019-9.

**Dragavon, J.**<sup>\*†</sup>; Blazquez, S.<sup>†</sup>; Samson, C.; Rogers, K.; Tournebize, R.; Shorte, S. Validation of a Method for Enhanced Production of Red-Shifted Bioluminescent Photons *in vivo*. **2011**, *Proc. of SPIE*, *7902*, 790210-1-790210-9.

Holland, A.; **Dragavon, J.**; Sigee, D. Methods for Estimating Intrinsic Autotrophic Biomass Yield and Productivity in Algae: Emphasis on Experimental Methods for Strain Selection. **2011**, *Biotech. J*, *6*, 15179-15190.

Rogers, K.; **Dragavon, J.**; Blazquez, S.; Shorte, S. A Method for Fluorophore Excitation by Unbound Bioluminescence: Increasing the number of Detectable Photons in Biological Imaging Applications. **2010**, *European Patent*: EP10290158.4.

**Dragavon, J.**; Molter, M.; Young, A.; McQuaide, S.; Zahn, M.; Holl, M.; Meldrum, D.; Lidstrom, M.; Burgess, L. Development of a Cellular Isolation System for Real-Time Single Cell Oxygen Consumption Monitoring. **2008**, *J. R. Soc. Interface*, *5*, S151-S159.

Molter, T.; Holl, M.; **Dragavon, J.**; McQuaide, S.; Anderson, J.; Young, A.; Burgess, L.; Lidstrom, M.; Meldrum, D. A New Approach for Measuring Single Oxygen Consumption Rates. **2008**, *IEEE Trans. Autom. Sci. Eng*, *5*, 32-42.

Young, A.; **Dragavon, J.**; Strovas, T.; Zheng, L.; Jen, A.; Burgess, L.; Lidstrom, M. Two-Photon Lithography of Platinum-Porphyrin Oxygen Sensors. **2007**, *IEEE Sensors*, *7* (5-6), 931-936.

Strovas, T.<sup>†</sup>; **Dragavon, J.**<sup>†</sup>; Hankins, T.; Callis, J.; Burgess, L.; Lidstrom, M. Measurement of Respiration Rates of *Methylobacterium extorquens* AM1 Using a Phosphorescence-Based Sensor. **2006**, *Appl. Environ. Microbiol*, *72* (2), 1692-1695.

McQuaide, S.; Holl, M.; Burgess, L.; Molter, T.; **Dragavon, J.**; Young, A.; Strovas, T.; Anderson, J.; Jen, A.; Karlsgodt, B.; Lidstrom, M.; Meldrum, D. A Living Cell Array (LCA) for Multiparameter Cell Metabolism Studies. **2006**, *BioRob*, 971-976.

Koschwanez, J.; Holl, M.; Marquardt, J.; **Dragavon, J.**; Burgess, L.; Meldrum, D. Identification of budding yeast using a fiber-optic imaging bundle. **2004**, *Rev. Sci. Instrum*, *75*, 1363-1365.

Rousslang, K.; Reid, P.; Haynes, D.; Holloway, D.; **Dragavon, J.**; Ross, J. Time-Resolved Phosphorescence Of Tyrosine, Tyrosine Analogs, And Tyrosyl Residues In Oxytocin And Small Peptides. **2002**, *J. Pro. Chem*, *21*, 547-555.

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