



# REGENERATIVE MEDICINE AND NANOMEDICINE INITIATIVE (RMNI)

WINTER 2010 UPDATE

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## NEW FUNDING News

The [RMNI Emerging Team Grant \(2009-2010\)](#) has recently closed for new applications. A record 61 Letters of Intent (LOIs) were received for this round. Following a LOI review, successful applicants will be invited to submit a full application. Total funds currently available for this funding opportunity is \$16.5M, with the maximum amount for a single grant \$500,000 per annum for up to 5 years.

## FUNDING DECISIONS

### [Catalyst Grant: Invention and High-Risk, High-Benefit Research \(2008-2009\)](#)

RFA launched in December 2008, in partnership with the Institute of Genetics. Eight grants were co-funded by RMNI and IG. Please see the Funding Decision section of the website for full results.

### [Knowledge Synthesis Grant](#)

RFA launched in December 2008, in partnership with CIHR KT portfolio. This competition is currently closed and results are expected soon.

## FUNDING OPPORTUNITIES

Please check <http://www.cihr-irsc.gc.ca/e/37788.html> for new opportunities.

## IN THE NEWS

### Supporting innovation through private-public partnerships

The Canadian Institutes of Health Research (CIHR) was proud to participate in the opening of the National Research Council (NRC) Olympus Centre for CARS Spectroscopy on November 17, 2009. The basis of the collaboration between NRC and Olympus was the development of a new CARS Multimodal Microscope module created by researchers supported through CIHR's Regenerative Medicine and Nanomedicine Initiative (RMNI) Team Grant Program (John Pezacki and Albert Stolow).

Michelle Gagnon, Director of Knowledge Synthesis and Exchange at CIHR, spoke about how collaborations with industry can advance the commercialization of pioneering technology developed by researchers supported through granting agencies like CIHR. The CARS User Facility will provide Canadian researchers with access to state-of-the-art expertise and equipment.



(From left to right) Dr. Yiwei (Kevin) Jia, Dr. Roman Szumski, Dr. John Pezacki, Michelle Gagnon, Dr. David Courtman, Dr. Osamu Joji, Dr. Michael Sowa, Dr. Dan Wayner, Dr. Ji-Xin Cheng  
- Photo from National Research Council Canada

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## ANNOUNCEMENT

RMNI is pleased to announce that Susan Lalumière has joined the Initiative as Project Officer. Susan has been with CIHR since 2002, when she joined as an administrative officer and meeting coordinator for the precursor to CIHR's Scientific Council (senior management committee). More recently, Susan has served as the Project Officer of the HIV/AIDS Research Initiative. Susan brings a wealth of experience at CIHR, and will be a valuable member of the RMNI-INMHA team.

## FEATURED RESEARCH PUBLICATION

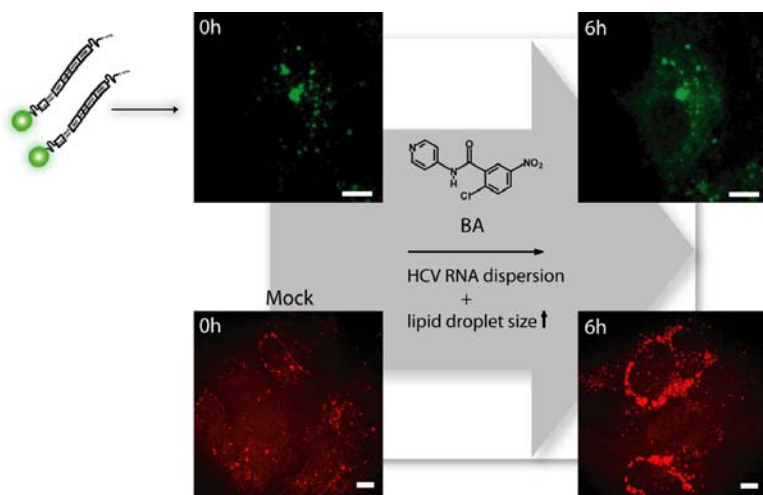


Lyn RK, Kennedy DC, Sagan SM, Blais DR, Rouleau Y, Pegoraro AF, Xie XS, Stolow A, Pezacki JP "Direct imaging of the disruption replication complexes of the hepatitis C virus by inhibitors of lipid metabolism" *Virology* 2009, 394, 130–142. *Cover image shown on the left taken from the paper.*

The significance of the paper is the demonstration of how coherent anti-Stokes Raman scattering microscopy (CARS), combined with 2-photon fluorescence microscopy, can be used to directly visualize the effect of lipid metabolism inhibition on hepatitis C virus (HCV) propagation.

In this case, the authors have shown how inhibitors of the mevalonate and malonyl-CoA pathways disrupt protein complexes where HCV replication takes place. This coincides with the dispersion of viral HCV RNA, and happens in conjunction with the accumulation of lipids and lipid storage organelles.

"Understanding the kinetics and processes involved in host lipid metabolism highlights the complexity with which viruses such as HCV can hijack the host. Here we have demonstrated that we are capable of monitoring the cellular pathways that are suitable for antiviral and small molecule intervention," according to **Rodney Lyn**, lead author of the paper, and a PhD candidate at the University of Ottawa, Department of Chemistry. CARS has allowed a way "to see the whole story of how the Hepatitis C virus replicates, rather than only the snapshot of the conclusion," says Rodney.



*Human hepatoma cells expressing a HCV genomic replicon RNA tagged with a 5'- Alexa fluor 488 label is treated with BA over the course of 6 h. Endogenous lipid droplets that are controlled by host lipid metabolic processes are hijacked by hepatitis c virus to facilitate viral particle assembly. By modulating lipid metabolism with this PPAR antagonist, the labeled RNA shown with highly punctate staining when confined in the replication complexes, rapidly disperses away from these sites of replication as changes in lipid droplet size and density are also captured with CARS microscopy under the same kinetics.*

## UPCOMING WORKSHOPS

Note: There are currently no Nanoforum / Nanomedicine workshops planned for the rest of the 2009-2010 fiscal year. Please submit any workshops you would like to see advertised in this newsletter.

## International Funding Opportunity

A newly released NIH Epigenetics Roadmap initiative: RFA-RM-09-016, Developing Technologies for Improved *In Vivo* Epigenetic Imaging or Analysis (R01) <http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-09-016.html>. PIs from foreign institutions are eligible to apply.

Please feel free to contact John Satterlee, PH.D. ([satterleej@nida.nih.gov](mailto:satterleej@nida.nih.gov)) with scientific questions relating to this RFA.