# The Future of Metallo-Proteases: Making the Cut in Biological Processes and Diseases

**July 8 - 9, 2017**

**Chairs**
Antoine H. Dufour and Dina V. Hingorani

**University of New England**
11 Hills Beach Road
Biddeford, ME, US

## Conference Description

The Gordon Research Seminar on Matrix Metalloproteinases is a unique forum for graduate students, post-docs, and other scientists with varying levels of experience and education to present and exchange new data and cutting edge ideas. In an informal, confidential and friendly setting young minds can interact and make invaluable collaborations with experienced researchers from academia and industry alike.

The focus of this meeting is to highlight recent developments in the field of metallo-protease biology with a focus on the ADAM, ADAMTS and MMP enzyme families. The discussions will center on the role of these enzymes in regulating the complex biological processes involved in development, tissue homeostasis, immune system regulation and diseases such as auto-immune conditions, cardiovascular and neurological disorders, infectious diseases, and cancer.

Proteases act in the context of complex cascades creating a multifaceted universe of protein-protein interactions dynamic and modulated in disease states. Whether your interest lies in substrate/inhibitor design, cell signaling pathways or utilizing existing tools to study a biological condition involving metallo-proteases, this Gordon Research Seminar series is the place for you. You will gain insight into the role of proteases in various disease states, new technology being developed to investigate and image these enzymes and leveraging this knowledge for drug discovery. We will take you back in time to what we know about metallo-proteases to move forward and fill in the gaps of what remains elusive. We will also discuss how to tackle the next generation problems in the field of proteolysis to solve crucial biological problems in human pathologies.

The GRS attendees are also suggested to attend the related GRC on Matrix Metalloproteinases (Chair, Howard C. Crawford and Vice Chair, Rama Khokha). This meeting will indeed have a strong representation from the next generation of scientists.

The GRS on Matrix Metalloproteinases will feature oral presentations, two poster sessions and a career panel to advise on and discuss the range of career paths available to graduate students and postdoctoral fellows.

Looking forward to seeing everyone is beautiful Maine.

Antoine Dufour (Chair) and Dina Hingorani (Associate Chair)

## Related Meeting

**This GRS will be held in conjunction with the "Matrix Metalloproteinases" Gordon Research Conference (GRC). Those interested in attending both meetings must submit an application for the GRC in addition to an application for the GRS. Refer to the associated GRC program page for more information.**

## Conference Program

| Saturday | |
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| 2:00 pm - 5:00 pm | Arrival and Check-in |
| 3:30 pm - 3:45 pm | Introductory Comments by GRC Site Staff / Welcome from the GRS Chair |
| 3:45 pm - 4:30 pm | **Novel Roles of Metalloproteases in Immunity**<br>Discussion Leader: **Estefania Ugarte Berzal** (KU Leuven, Belgium) |
| 3:45 pm - 3:50 pm | Opening Remarks |
| 3:50 pm - 4:05 pm | **Lise Boon** (KU Leuven, Belgium)<br>"Proteolytic and Glycosylation Modification of the Propeptide Domain of Human Gelatinase B/Matrix Metalloproteinase-9" |
| 4:05 pm - 4:10 pm | Discussion |

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| 4:10 pm - 4:25 pm | **Benjamin Schoeps** (Klinikum Rechts der Isar, Technical University of Munich, Germany)<br>"Unravelling Neutrophil Functions in the TIMP-1-Induced Pre-Metastatic Liver Niche" |
| 4:25 pm - 4:30 pm | Discussion |
| 4:30 pm - 6:00 pm | **Poster Session** |
| 6:00 pm - 7:00 pm | Dinner |
| 7:30 pm - 9:30 pm | **Inflammatory Responses: Regulation of Proteases in Immunity**<br>Discussion Leader: **Florian Bleibaum** (University Medical Center Schleswig-Holstein (UKSH), Germany) |
| 7:30 pm - 7:45 pm | **Estefania Ugarte Berzal** (KU Leuven, Belgium)<br>"MMP-9/Gelatinase B Activity Is Essential for the Degradation of Immune Complexes in Systemic Autoimmune Diseases" |
| 7:45 pm - 7:50 pm | Discussion |
| 7:50 pm - 8:05 pm | **Joselyn Rojas** (Brigham and Women's Hospital, USA)<br>"Adam8 Limits Emphysema Development in Smoke-Exposed Mice: A New Player in the Pathogenesis of COPD" |
| 8:05 pm - 8:10 pm | Discussion |
| 8:10 pm - 8:25 pm | **Maryam Raeeszadeh Sarmazdeh** (Mayo Clinic, USA)<br>"Developing Therapeutics for Lung Fibrosis Based on a Natural Matrix Metalloproteinase-3 (MMP-3) Inhibitor" |
| 8:25 pm - 8:30 pm | Discussion |
| 8:30 pm - 8:45 pm | **Ashley Weiss** (University of Toronto, Canada)<br>"The TIMP Family Governs Maintenance of the Adult Hematopoietic Bone Marrow Niche" |
| 8:45 pm - 8:50 pm | Discussion |
| 8:50 pm - 9:05 pm | **Tom Seegar** (Harvard Medical School, USA)<br>"Mutual Autoregulatory Interface Revealed by the Structure of the α-Secretase ADAM10" |

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| 9:05 pm - 9:10 pm | Discussion |
| 9:10 pm - 9:30 pm | General Discussion |
| **Sunday** | |
| 7:30 am - 8:30 am | Breakfast |
| 9:00 am - 11:00 am | **New Perspectives in Protease Biology / Keynote Session: Metallo-Proteases**<br>Discussion Leader: **Tom Seegar** (Harvard Medical School, USA) |
| 9:00 am - 9:15 am | **Jennifer Vandooren** (Rega Institute for Medical Research, KU Leuven, Belgium)<br>"Endotoxemia Results in Depletion of Bone Marrow Gelatinase B/MMP-9 and Systematic Upregulation of TIMP-1" |
| 9:15 am - 9:20 am | Discussion |
| 9:20 am - 9:35 am | **Florian Bleibaum** (University Medical Center Schleswig-Holstein (UKSH), Germany)<br>"Phosphatidylserine Exposure Regulates ADAM10 Shedding Activity" |
| 9:35 am - 9:40 am | Discussion |
| 9:40 am - 9:55 am | **Maria Cristina Miranda Vergara** (University of Notre Dame, USA)<br>"Stromal MMP3 Inhibits Oncogenic Potential During Breast Cancer Progression" |
| 9:55 am - 10:00 am | Discussion |
| 10:00 am - 10:45 am | **Carl Blobel** (Hospital for Special Surgery, Weill Cornell Medicine, USA)<br>"Metallo-Proteases: Past, Present and Future" |
| 10:45 am - 11:00 am | Discussion |
| 11:00 am - 12:30 pm | **Poster Session**<br>*Coffee will be served in the poster area from 11:00 am - 11:30 am* |
| 12:30 pm - 1:30 pm | Lunch |

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| 1:30 pm - 2:30 pm | **Mentorship Component: Career Panel**<br>Discussion Leader: **Antoine Dufour** (University of British Columbia, Canada) |
| 1:30 pm - 2:30 pm | **Panel Discussion**<br>*Professional Options for Protease Researchers*<br>• **Ghislain Opdenakker** (University of Leuven, Belgium)<br>• **Sharon Stack** (University of Notre Dame, USA) |
| 2:30 pm - 3:00 pm | **Evaluation Period**<br>*Fill in GRS Evaluation Forms* |
| 3:00 pm | Seminar Concludes |

## Contributors