

RNA Editing

Gordon Research Conference

Biology and Mechanisms of RNA and DNA Modification

Dates

March 12-17, 2017

Location

Four Points Sheraton / Holiday Inn Express
Ventura, CA

Organizers

Chairs:

Reuben S. Harris & Heather A. Hundley

Vice Chairs:

Valerie A. De Crecy-Lagard & Jin Billy Li

Application Deadline

Applications for this meeting must be submitted by **February 12, 2017**. Please apply early, as some meetings become oversubscribed (full) before this deadline. If the meeting is oversubscribed, it will be stated here. *Note:* Applications for oversubscribed meetings will only be considered by the Conference Chair if more seats become available due to cancellations.

Meeting Description

The GRC on RNA Editing is the only international meeting dedicated to nucleic acid modifications. The 2017 meeting is subtitled "Biology and Mechanisms of RNA and DNA Modification". RNA and DNA modifications are programmed in nearly all organisms and influence many fundamental processes including gene expression, protein expression, metabolism, epigenetics, cognition, innate and adaptive immunity, autoimmune disease, and cancer. While different enzymes and molecular machines are responsible for generating the large repertoire of modifications and editing events present in individual cells, tissues, organisms, and disease states, there are many conceptual and mechanistic similarities and researchers investigating these diverse processes have benefited immensely from the theoretical and technical advances of complementary areas. Thus, the GRC on RNA Editing fosters the ever-increasing need to exchange ideas among researchers who are at the forefront of these exciting, fast-moving, and diverse fields with the goal of continuing to promote a deeper understanding of the molecular mechanisms as well as the physiological functions and pathological processes governed by nucleic acid editing and modification events.

The 2017 GRC on RNA Editing is additionally unique because it will celebrate the 20th year of this biennial conference (10th anniversary). To commemorate this special event, Professor Tomas Lindahl, FRS, 2015 Nobel Laureate in Chemistry, will give a keynote lecture on "Endogenous DNA Damage and Its Repair". This talk will be complemented by about 50 oral and 100 poster presentations representing most areas of RNA and DNA editing and modification. The program will have nine sessions, which will be organized to bring together experts and trainees working on different systems with common areas of interest, in the following broad areas: Physiological Functions for Editing and Modification; Neuro-Editing; Editing in Immunity; Epitranscriptomics; RNA and DNA Modifications in Cancer; Molecular Mechanisms of Editing Machines; Regulation of Editing and Modification; Genome and Transcriptome Engineering Technologies; and New Frontiers in Editing. Presentations will be from scientists at all stages of their careers, including a number selected from submitted abstracts. In addition, the program will include four poster sessions at which all participants are encouraged to present and discuss results. As is our tradition, we will strive to provide a gender balanced and an ethnically and geographically diverse meeting that allows investigators to present novel findings and new approaches, while also providing a collegial opportunity for all participants to interact, which will lead to new insights and a deeper understanding of editing and modification mechanisms.

Related Meeting



This GRC will be held in conjunction with the "RNA Editing" Gordon Research Seminar (GRS). Those interested in attending both meetings must submit an application for the GRS in addition to an application for the GRC. Refer to the [associated GRS program page](#) for more information.

Contributors



Meeting Program

Sunday

4:00 pm - 8:00 pm	Arrival and Check-in
6:00 pm	Dinner
7:30 pm - 7:40 pm	Welcome / Introductory Comments by GRC Site Staff
7:40 pm - 9:30 pm	New Frontiers in Editing
	Discussion Leader: Reuben Harris (Howard Hughes Medical Institute, USA)
7:40 pm - 7:50 pm	Opening Remarks
7:50 pm - 8:05 pm	Eric Greer (Harvard Medical School, USA) "DNA Methylation on N6-Adenine in Metazoans"
8:05 pm - 8:10 pm	Discussion
8:10 pm - 8:25 pm	Jane Jackman (Ohio State University, USA) "tRNA Editing and Modification: Unusual Mechanisms and Enzymes at Work"
8:25 pm - 8:30 pm	Discussion

- 8:30 pm - 8:45 pm **Eli Eisenberg** (Tel Aviv University, Israel)
"Comparative Editomics of Cephalopods"
- 8:45 pm - 8:50 pm Discussion
- 8:50 pm - 9:05 pm **Erez Levanon** (Bar-Ilan University, Israel)
"Genome Evolution by APOBEC-Mediated DNA Editing"
- 9:05 pm - 9:10 pm Discussion
- 9:10 pm - 9:25 pm Short Talk Selected from Poster Abstracts
- 9:25 pm - 9:30 pm Discussion

Monday

- 7:30 am - 8:30 am Breakfast
- 8:30 am Group Photo
- 9:00 am - 12:30 pm **Physiological Functions for Editing and Modification**
- Discussion Leader: **Kazuko Nishikura** (The Wistar Institute, USA)
- 9:00 am - 9:15 am **Chuan He** (University of Chicago, USA)
"RNA Methylation in Gene Expression Regulation"
- 9:15 am - 9:20 am Discussion
- 9:20 am - 9:35 am **Carl Walkley** (St. Vincent's Institute of Medical Research, Australia)
"Understanding the Roles of ADAR1 *In Vivo*"
- 9:35 am - 9:40 am Discussion
- 9:40 am - 9:55 am **Valerie De Crecy-Lagard** (University of Florida, USA)
"*In Vivo* Function Roles of the Complex Modifications of tRNAs, Queuosine and t6A"
- 9:55 am - 10:00 am Discussion
- 10:00 am - 10:15 am Short Talk Selected from Poster Abstracts
- 10:15 am - 10:20 am Discussion
- 10:20 am - 10:50 am Coffee Break
- 10:50 am - 11:05 am **Joshua Rosenthal** (Marine Biological Laboratory, USA)
"Extranuclear RNA Editing in Squid"
- 11:05 am - 11:10 am Discussion
- 11:10 am - 11:25 am **Alvaro Glavic Maurer** (University of Chile, Chile)
"The Impact t6A Modification on Cell Growth and Protein Homeostasis in Metazoans"
- 11:25 am - 11:30 am Discussion
- 11:30 am - 11:45 am **Jody Puglisi** (Stanford University, USA)
"mRNA Modifications and Translation Dynamics"
- 11:45 am - 11:50 am Discussion
- 11:50 am - 12:05 pm **Brenda Bass** (University of Utah, USA)
"Roles of ADAR Editing in Non-Coding Regions of mRNAs"
- 12:05 pm - 12:10 pm Discussion
- 12:10 pm - 12:25 pm Short Talk Selected from Poster Abstracts
- 12:25 pm - 12:30 pm Discussion
- 12:30 pm Lunch
- 1:30 pm - 4:00 pm Free Time

3:00 pm - 4:00 pm Power Hour

The GRC Power Hour is an optional informal gathering open to all meeting participants. It is designed to help address the challenges women face in science and support the professional growth of women in our communities by providing an open forum for discussion and mentoring.

Organizer: **Jonatha Gott** (Case Western Reserve University, USA)

4:00 pm - 6:00 pm Poster Session

6:00 pm Dinner

7:30 pm - 9:30 pm **Regulation of RNA Editing and Modification**

Discussion Leader: **Linda Chelico** (University of Saskatchewan, Canada)

7:30 pm - 7:45 pm **Juan Alfonso** (The Ohio State University, USA)
"Retrograde Nuclear Transport of tRNAs in *T. brucei*: Splicing and Modification as Driving Forces"

7:45 pm - 7:50 pm Discussion

7:50 pm - 8:05 pm **Gideon Rechavi** (Tel Aviv University, Israel)
"The Expanding Repertoire of mRNA Methylation"

8:05 pm - 8:10 pm Discussion

8:10 pm - 8:25 pm **Kazuko Nishikura** (The Wistar Institute, USA)
"Regulation of ADAR1 Functions"

8:25 pm - 8:30 pm Discussion

8:30 pm - 8:45 pm **Eric Phizicky** (University of Rochester School of Medicine, USA)
"tRNA Modifications and Quality Control Mechanisms"

8:45 pm - 8:50 pm Discussion

8:50 pm - 9:05 pm Talk Selected from the GRS

9:05 pm - 9:10 pm Discussion

9:10 pm - 9:25 pm Talk Selected from the GRS

9:25 pm - 9:30 pm Discussion

Tuesday

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm **Editing in Immunity**

Discussion Leader: **Silvestro Conticello** (Istituto Toscano Tumori / AOU Careggi, Italy)

9:00 am - 9:15 am **Daniel Stetson** (University of Washington, USA)
"The Relationship Between ADAR1 RNA Editing and Innate Immunity"

9:15 am - 9:20 am Discussion

9:20 am - 9:35 am **Charles Samuel** (University of California, Santa Barbara, USA)
"Adenosine Deaminase ADAR1 as a Suppressor of dsRNA-Mediated Responses"

9:35 am - 9:40 am Discussion

9:40 am - 9:55 am **Nina Papavasiliou** (Rockefeller University, USA)
"RNA Editing and the Fine Tuning of the Innate Immune Repertoire"

9:55 am - 10:00 am Discussion

10:00 am - 10:15 am Short Talk Selected from Poster Abstracts

10:15 am - 10:20 am Discussion

- 10:20 am - 10:50 am Coffee Break
- 10:50 am - 11:05 am **Mary O'Connell** (Central European Institute of Technology - Masaryk University (CEITEC MU), Czech Republic)
"ADARs and Innate Immunity"
- 11:05 am - 11:10 am Discussion
- 11:10 am - 11:25 am **Javier Di Noia** (Institut de Recherches Cliniques de Montreal (IRCM), Canada)
"Structure-Function of Activation Induced Deaminase Reveals Requirements for Mutating Eukaryotic Genomes"
- 11:25 am - 11:30 am Discussion
- 11:30 am - 11:45 am **Michael Jantsch** (University of Vienna, Austria)
"Substrates of ADAR1 Triggering Interferon Signaling"
- 11:45 am - 11:50 am Discussion
- 11:50 am - 12:05 pm Short Talk Selected from Poster Abstracts
- 12:05 pm - 12:10 pm Discussion
- 12:10 pm - 12:25 pm Short Talk Selected from Poster Abstracts
- 12:25 pm - 12:30 pm Discussion
- 12:30 pm Lunch
- 1:30 pm - 4:00 pm Free Time
- 4:00 pm - 6:00 pm Poster Session
- 6:00 pm Dinner
-
- 7:30 pm - 9:30 pm **Epitranscriptomics**
- Discussion Leader: **Erez Levanon** (Bar-Ilan University, Israel)
- 7:30 pm - 7:45 pm **Samie Jaffrey** (Weill Cornell Medicine, USA)
"Control of mRNA Stability and Translation by Distinct Forms of Adenosine Methylation"
- 7:45 pm - 7:50 pm Discussion
- 7:50 pm - 8:05 pm **Bora Baysal** (Roswell Park Cancer Institute, USA)
"APOBEC3 Enzymes and the Expanding Role C to U RNA Editing in Human Transcriptome Diversity"
- 8:05 pm - 8:10 pm Discussion
- 8:10 pm - 8:25 pm **Mark Helm** (Johannes Gutenberg University of Mainz, Germany)
"Detection of RNA Modifications in RNA Seq Data Using Reverse Transcription Signatures"
- 8:25 pm - 8:30 pm Discussion
- 8:30 pm - 8:45 pm **Jin Billy Li** (Stanford University School of Medicine, USA)
"Regulatory and Functional Landscape of A-to-I RNA Editing"
- 8:45 pm - 8:50 pm Discussion
- 8:50 pm - 9:05 pm **Yi-Tao Yu** (University of Rochester Medical Center, USA)
"RNA-Guided RNA Pseudouridylation"
- 9:05 pm - 9:10 pm Discussion
- 9:10 pm - 9:25 pm Short Talk Selected from Poster Abstracts
- 9:25 pm - 9:30 pm Discussion

Wednesday

- 7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm

Molecular Mechanisms of Editing Machines

Discussion Leader: **Juan Alfonzo** (The Ohio State University, USA)

9:00 am - 9:15 am

Peter Beal (University of California, Davis, USA)

"Structural Basis for ADAR's Selectivity and A to I Editing Mechanism"

9:15 am - 9:20 am

Discussion

9:20 am - 9:35 am

Linda Chelico (University of Saskatchewan, Canada)

"Insights into How APOBEC3B Accesses Single-Stranded DNA in the Nucleus in Comparison to APOBEC3A and APOBEC3H"

9:35 am - 9:40 am

Discussion

9:40 am - 9:55 am

Harold Smith (School of Medicine and Dentistry, University of Rochester Medical Center, USA)

"APOBEC3G Residues Involved in General Versus Specific Nucleic Acid Binding"

9:55 am - 10:00 am

Discussion

10:00 am - 10:15 am

Short Talk Selected from Poster Abstracts

10:15 am - 10:20 am

Discussion

10:20 am - 10:50 am

Coffee Break

10:50 am - 11:05 am

Brandt Eichman (Vanderbilt University, USA)

"Structural Mechanisms of DNA Inter-Strand Crosslink Repair by DNA Glycosylases"

11:05 am - 11:10 am

Discussion

11:10 am - 11:25 am

Ruslan Aphasizhev (Boston University Medical Campus, USA)

"Guide RNA Biogenesis in Mitochondria of Trypanosomes"

11:25 am - 11:30 am

Discussion

11:30 am - 11:45 am

Jonatha Gott (Case Western Reserve University, USA)"Zeroing in on Trans-Acting Factors Required for RNA Editing in *Physarum* Mitochondria"

11:45 am - 11:50 am

Discussion

11:50 am - 12:05 pm

Maureen Hanson (Cornell University, USA)

"Diverse Composition of Plant RNA Editosomes"

12:05 pm - 12:10 pm

Discussion

12:10 pm - 12:25 pm

Short Talk Selected from Poster Abstracts

12:25 pm - 12:30 pm

Discussion

12:30 pm

Lunch

1:30 pm - 4:00 pm

Free Time

4:00 pm - 6:00 pm

Poster Session

6:00 pm

Dinner

7:30 pm - 9:30 pm

Genome and Transcriptome Engineering Technologies

Discussion Leader: **Joshua Rosenthal** (Marine Biological Laboratory, USA)

7:30 pm - 7:45 pm

Martin Jinek (University of Zurich, Switzerland)

"Structural Insights into CRISPR-Cas9 and RNA Modification"

7:45 pm - 7:50 pm

Discussion

7:50 pm - 8:05 pm

Rebecca Terns (University of Georgia, USA)

"RNA-Guided DNA and RNA Targeting by the CRISPR-Cas Invader Defense Systems"

8:05 pm - 8:10 pm

Discussion

- 8:10 pm - 8:25 pm **Laurie Read** (University at Buffalo School of Medicine and Biomedical Sciences, USA)
"TREAT Yourself: Unraveling Functions of the Trypanosome RNA Editing Substrate Binding Complex with the Help of High Throughput Sequencing"
- 8:25 pm - 8:30 pm Discussion
- 8:30 pm - 8:45 pm **Stewart Shuman** (Memorial Sloan Kettering Cancer Center, USA)
"Making Ends Meet During RNA Repair"
- 8:45 pm - 8:50 pm Discussion
- 8:50 pm - 9:05 pm **Peter Dedon** (Massachusetts Institute of Technology, USA)
"tRNA Maturation, Modification Reprogramming and Codon-Biased Translation in Malaria Parasites"
- 9:05 pm - 9:10 pm Discussion
- 9:10 pm - 9:25 pm Short Talk Selected from Poster Abstracts
- 9:25 pm - 9:30 pm Discussion

Thursday

- 7:30 am - 8:30 am Breakfast
- 8:30 am - 9:00 am Business Meeting
Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair
-
- 9:00 am - 12:30 pm **RNA and DNA Modifications in Cancer**
Discussion Leader: **Nina Papavasiliou** (Rockefeller University, USA)
- 9:00 am - 9:15 am **Nicholas Davidson** (Washington University School of Medicine, USA)
"Unexpected Functions of the C to U RNA Editosome in Tumorigenesis"
- 9:15 am - 9:20 am Discussion
- 9:20 am - 9:35 am **David Schatz** (Yale University / Howard Hughes Medical Institute, USA)
"Mapping AID Susceptibility Across the Human Genome"
- 9:35 am - 9:40 am Discussion
- 9:40 am - 9:55 am **Anjana Rao** (La Jolla Institute for Allergy and Immunology, USA)
"TET Proteins and Cancer"
- 9:55 am - 10:00 am Discussion
- 10:00 am - 10:15 am Short Talk Selected from Poster Abstracts
- 10:15 am - 10:20 am Discussion
- 10:20 am - 10:50 am Coffee Break
- 10:50 am - 11:05 am **Silvestro Conticello** (Istituto Toscano Tumori / AOU Careggi, Italy)
"APOBEC1 - A Dual Path to Cancer"
- 11:05 am - 11:10 am Discussion
- 11:10 am - 11:25 am **Hilde Nilsen** (University of Oslo, Norway)
"DNA and RNA Processing Activity of SMUG1 Contributes to Telomere Maintenance"
- 11:25 am - 11:30 am Discussion
- 11:30 am - 11:45 am **Sohail Tavazoie** (The Rockefeller University, USA)
"Surprising Roles for tRNAs in Cancer Progression"
- 11:45 am - 11:50 am Discussion
- 11:50 am - 12:05 pm Short Talk Selected from Poster Abstracts

12:05 pm - 12:10 pm Discussion
 12:10 pm - 12:25 pm Short Talk Selected from Poster Abstracts
 12:25 pm - 12:30 pm Discussion
 12:30 pm Lunch
 1:30 pm - 4:00 pm Free Time
 4:00 pm - 6:00 pm Poster Session
 6:00 pm Dinner

7:30 pm - 9:30 pm **Neuro-Editing**

Discussion Leader: **Heather Hundley** (Indiana University, USA)

7:30 pm - 7:45 pm **Michaela Frye** (University of Cambridge, United Kingdom)
 "Cytosine-5 RNA Methylation in Development and Human Diseases"

7:45 pm - 7:50 pm Discussion

7:50 pm - 8:05 pm **Marie Ohman** (Stockholm University, Sweden)
 "Regulation of A-to-I Editing in Neurons"

8:05 pm - 8:10 pm Discussion

8:10 pm - 8:25 pm **Robert Reenan** (Brown University, USA)
 "RNA Editing and the Regulation of Endogenous dsRNA"

8:25 pm - 8:30 pm Discussion

8:30 pm - 8:45 pm **William Joiner** (University of California, San Diego, USA)
 "ADAR-Mediated RNA Editing Suppresses Sleep by Acting as a Brake on Glutamatergic Synaptic Plasticity in *Drosophila*"

8:45 pm - 8:50 pm Discussion

8:50 pm - 9:05 pm Short Talk Selected from Poster Abstracts

9:05 pm - 9:10 pm Discussion

9:10 pm - 9:25 pm Short Talk Selected from Poster Abstracts

9:25 pm - 9:30 pm Discussion

Friday

7:30 am - 8:30 am Breakfast

9:00 am Departure