Challenges in RNA Structural Modeling and Design

  Dates:     July 7-11, 2014

  Location:  The Telluride Intermediate School, 725 W. Colorado, Telluride,
             CO 81435

  Organizers: Tamar Schlick: schlick@nyu.edu (917-592-9979)
              Anna Marie Pyle: anna.pyle@yale.edu (203-980-8612)

  TSRC Hosts: Rory Sullivan (970-708-4542) and Nana Naisbitt (970-708-0004)

                         Tentative Program

~~~~~~   Sunday, July 6   ~~~~~~

6:00 - 8:00  Information Meet and Greet at Arroyo Gallery and Wine Bar at 220 East Colorado Avenue. Open to all TSRC participants and their families. Cash Bar. TSRC employee on hand to answer questions.

   ~~~~~~   Monday, July 7   ~~~~~~

   8:30 - 9:00  Breakfast at TSRC

   Session I:  RNA Interactions, Mechanisms, and Dynamics
   Chair: Tamar Schlick

   9:00 -  9:15  Welcome and introduction

   9:15 - 10:00  Sarah Woodson: Dynamic RNA-protein interactions in
                 ribosome assembly

  10:00 - 10:10  Discussion

  10:10 - 10:30  Coffee break

  10:30 - 11:15  David Lilley: A critical sequence determinant for
                 k-turn folding in natural RNA molecules

  11:15 - 11:25  Discussion

  11:25 - 12:10  Tao Pan: Consequence of N6-methyl-adenosine modification
                 in mammalian mRNA on RNA structure and RNA-protein
                 interactions

  12:10 - 12:20  Discussion

  12:20 - 12:30  Open Discussion (meeting goals, agenda, etc.)

  Lunch on your own, free afternoon

  ~~~~~~ Tuesday, July 8 ~~~~~~

  Breakfast on your own
  Free time (can organize for group hike?)

  Session II: RNA Modeling and Simulation
  Chair: Anna-Marie Pyle

  3:00 - 3:45 Robert Jernigan:  Elastic network models for RNA structural
              dynamics
  3:45 - 3:55 Discussion

  3:55 - 4:40 Tamar Schlick: Adventures with RNA graphs
  4:40 - 4:50 Discussion

  6:00 - 7:15 "Town Talk":  George Weiblen, Professor of Plant Biology,
              University of Minnesota:
              Lead us not into Hemptation: The Genetics of American Cannabis

              Telluride Conference Center in Mountain Village

  ~~~~~~ Wednesday, July 9 ~~~~~~

  8:30 - 9:00 Breakfast at TSRC

  Session III: RNA mechanisms and design
  Chair: David Lilley

  9:00 -  9:45    Philip Bevilacqua: Combining experiments with theory to
                  obtain deeper insight into ribozyme mechanism

  9:45 -  9:55    Discussion

  9:55 - 10:15    Coffee Break

10:15 - 11:00    Rob Batey: designing riboswitches from biological
                  components

11:00 - 11:10    Discussion

11:10 - 11:55    Karissa Sanbonmatsu: Ribosomes, riboswitches and lncRNAs:
                  modeling and biochemistry

11:55 - 12:05    Discussion

   Lunch on your own and free time

  Session IV: Large RNA Challenges
  Chair: Sarah Woodson

  3:30 - 4:15   Encarna Martinez-Salas: Impact of RNA structure and
                RNA-binding proteins on the activity of picornavirus
                IRES elements
  4:15 - 4:25   Discussion

  4:25 - 5:10   Anna Marie Pyle: Solving and modeling large RNA structures:
                lessons from group II introns and other large ribozymes
  5:10 - 5:20   Discussion

  6:00 - 9:00 Picnic at Ah Haa School for the Arts, 300
          S. Townsend (Family and guests welcome free of charge)

  ~~~~~~ Thursday, July 10 ~~~~~~

  Session V: Mathematical Perspectives in RNA Modeling
  Chair: Robert Jernigan

   8:30 - 9:00  Breakfast

   9:00 - 9:45  Christine Heitsch: Profiling Small RNA Sequences Reveals
                Signal at the Substructure Level in a Boltzmann Sample
   9:45 - 9:55  Discussion

   9:55 - 10:40 Henry Orland: RNA Folding: From Random Matrix Theory to
                Structure Prediction Algorithms
  10:40 - 10:50 Discussion

  10:50 - 11:10 Coffee Break

  11:10 -11:55  Louis Petingi: RNA partitioning, a graph-theoretical
                approach
  11:55 -12:05  Discussion

  12:05 - 12:50 Christian Laing: Investigating a second-Level of coding
                between RNA structure and protein structure in RNA viruses
  12:50 - 1:00  Discussion

  TENTATIVE (Optional):
  Session VI: Perspective Discussion
   5:00 - 7:00 Open discussion

  ~~~~~~ Friday, July 11 ~~~~~~~

  8:30 - 9:00 Breakfast at TSRC

  Session VI: Perspective Discussion

   9:00 - 11:00 Summary
               Round panel discussion
               Open challenges
               Conference report
               Goals for next meeting (TSRC, June 2016)