Challenges in RNA Structural Modeling and Design

 Dates: June 21-24, 2016

Location:  Telluride Elementary School, 447 West Columbia Ave,
            Telluride, CO 81435

 \*\*\*  NOTE: This is a separate location from the Telluride Intermediate
      School where conferences were held in 2014. \*\*\*

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**Participants:**

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**Program Schedule**
NOTE: All talks are 35min + 10min discussion

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| **Tuesday, June 21** |
| 8:00am - 9:00am | Breakfast at TSRC |
| **Session I:  RNA Flexibility and DynamicsChair: Tamar Schlick** |
| 9:00am – 9:10am | Welcome and introduction |
| 9:10am – 9:45am | **Sarah Woodson**: Conformational space and RNA folding landscapes in the test tube and the cell. |
| 9:45am – 9:55am | Discussion |
| 9:55am – 10:30am | **David Mathews**: Using structure mapping data to model RNA structures with multiple conformations |
| 10:30am – 10:40am | Discussion |
| 10:40am – 11:10am | Coffee break |
| 11:10am – 11:45am | **Xiang-Jun Lu**: DSSR: an integrated software tool for dissecting the spatial structure of RNA |
| 11:45am – 11:55am | Discussion |
| 11:55am – 12:15pm | **Open Discussion** (meeting goals: working group, special volume, future meetings?) |
|  Lunch on your own, free afternoon |
| 3:00pm – 5:30pm | **Group Hike**: Bear Creek Trail, meet in front of Telluride public library |
| 6:00pm | **Town Talk**:  Science and the 2016 Presidential Election,Franz Geiger, PhD, Professor of Chemistry, Northwestern U., Telluride Conference Center in Mountain Lodge |

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| **Wednesday, June 22** |
| 8:00am - 9:00am | Breakfast at TSRC |
|  Free time (hiking, water rafting, working...) |
| **Session II: RNA Motifs and Design Chair: Sarah Woodson** |
| 3:00pm – 3:35pm | **David Lilley:** The k-turn as a key building element in RNA architecture; figuring out the rules |
| 3:35pm – 3:45pm | Discussion |
| 3:45pm – 4:20pm | **Neocles Leontis**: Toward Automated RNA 3D Motif Quality Assessment and Annotation, Extraction and Clustering, and Data-mining for RNA 3D Structure Prediction |
| 4:20pm – 4:30pm | Discussion |
| 4:30pm – 4:40pm | Afternoon Break |
| 4:40pm – 5:15pm | **Cigdem Bayrak, Swati Jain, and** **Tamar Schlick**: Coarse-grained graph approaches to RNA motif enumeration and design |
| 5:15pm – 5:25pm | Discussion |
| 5:25pm – 6:00pm | **Anna Pyle**:  Identifying and characterizing functional motifs in RNA secondary and tertiary structure |
| 6:00pm – 6:10pm | Discussion |
| 6:00pm – 9:00pm | Picnic in Tent outside the Elementary SchoolFriends and family welcome! |

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| **Thursday, June 23** |
| 8:00am - 9:00am | Breakfast at TSRC |
| **Session III: Large RNA Challenges, Function, and Dynamics Chair: David Lilley** |
| 9:00am – 9:35am | **Rhiju Das:** Improving de novo structure modeling of RNA motifs |
| 9:35am – 9:545am | Discussion |
| 9:45am – 10:20am | **Alain Laederach:** A quantitative RNA structure mediated model of 5Y UTR ribosomal leaky scanning |
| 10:20am – 10:30am | Discussion |
| 10:30am – 10:50 am | Coffee break |
| 10:50am – 11:25am | **Karissa Sanbonmatsu**: Exploring the secondary structure of steroid receptor RNA activator lncRNA using SHAPE and 3S  |
| 11:25am – 11:35am | Discussion |
| 11:35am – 12:10pm | **Kevin Weeks**: The Pervasive Role of RNA Structure inlncRNA Function |
| 12:10pm – 12:20pm | Discussion |
| 12:20pm – 12:40pm | **Srinivas Somarowthu** |
| 12:40pm – 12:45pm | Discussion |
| Lunch on your own and free time |

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| **Friday, June 24** |
| 8:00am - 9:00am | Breakfast at TSRC |
| **Session IV: Mathematical Perspectives in RNA Modeling Chair: Anna Pyle** |
| 9:00am – 9:35am | **Christine Heitsch**: Mining RNA structural information from the Boltzmann ensemble |
| 9:35am – 9:45am | Discussion |
| 9:45am – 10:20am | **Darrin York:** Ribozyme Catalysis with a Twist |
| 10:20am – 10:30am | Discussion |
| 10:30am – 10:50 am | Coffee break |
| 10:50am – 11:10am | **Juyong Lee:** Investigating the structure and conformational changes of biomolecules via global optimization |
| 11:10am – 11:15am | Discussion |
| **Session V: Perspectives** |
| 11:15am – 12:45pm | **Open discussion:** Open challenges, Conference report, Goals for next meeting (TSRC, June 2018 ?) |

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| **Saturday, June 25** |
| 8:00am - 9:00am | Breakfast at TSRC |
|  **Session VII:  Summary** |
| 9:00am – 11:00am | Writeups and summary |