

Telluride Workshop on Proton Transfers in Biology

Telluride Intermediate School

725 W Colorado Avenue

July 8 – July 13

Organizers: Petra Hellwig (+33 678240753), Alexei Stuchebrukhov (aastuchebrukhov@ucdavis.edu)

Local TSRC Host: Mark Kozak (970-708-4426)

No of participants 25

July 8th Sunday

18-21 (pm) Arrival, getting together, @Smugglers: 225 S Pine St, Telluride, CO 81435

July 9th Monday

7:30-8:00 Breakfast at Telluride Intermediate School

Registration

8:00-8:30 Introduction **Mark Kozak**, TSRC Director + Alexei and Petra

8:30-9:15 **Tom DeCoursey** How do Voltage-Gated Proton Channels Sense and Respond to pH?

9:15-10:00 **Joachim Heberle** IR signatures of proton transfer in bacteriorhodopsin

10:00-10:30 **Coffee Break**

10:30-11:15 **Noam Agmon** Protons on membranes

11:15-12:00 **Ana-Nicoleta Bondar** Proton transfer at membrane and protein interfaces

July 10th Tuesday

7:30-8:00 Breakfast at Telluride Intermediate School

- 8:00-8:45 **Leo Sazanov** Update on the mechanism of coupling between electron transfer and proton translocation in respiratory complex I
- 8:45-9:30 **Artur Osyczka** Electron and proton transfers at the quinone catalytic sites of cytochromes bc
- 9:30-10:15 **Peter Brzezinski** Regulation of cytochrome c oxidase activity in mitochondria"
- 10:15-10:45 **Coffee Break**
- 10:45-11h30 **Ville Kaila** Mechanism of long-range proton-electron transfer in respiratory complex I
- 11:30-12:15 **Jessica Swanson** Multiscale Kinetic Modeling of Coupled Proton Transport Processes
- 18:30 **Town talk** at the Telluride Conference Center in Mountain Vintage, Speaker: **Prineha Narang**, Harvard, "Quantum Engineering, One Atom at Time."

July 11th Wednesday

- 7:30-8:00 **Breakfast at Telluride Intermediate School**
- 8:00-8:45 **Robert B Gennis** Proton pumping and decoupling of an A2-family heme-copper oxidase
- 8:45-9:30 **Tom Moore and Ana Moore**, One-Electron Oxidation Coupled to Multiple Proton Transfers in Artificial Photosynthesis
- 9:30-10:15 **Jon Hosler** Proton Leaks Induced by the Absence of Respiratory Supercomplex Factors
- 10:15-10:45 **Coffee Break**
- 10:45-11h30 **Petra Hellwig** In situ identification of pK values via IR spectroscopy
- 11:30-12:15 **Hai Lin** Proton through a channel by adaptive QM/MM
- 18h00 **Picnic**

July 12th Thursday

- 7:30-8:00 **Breakfast at Telluride Intermediate School**

8:00-8:45	Marilyn Gunner Untangling hydrogen bond pathways for proton transfers.
8:45-9:30	Ehud Pines Acid-base reactions involving proton transport and proton solvation in aqueous physiological environments,
9:30-10:15	Greg Voth Proton Transport in Water, Materials, and Proteins: Insights and Surprises from Multiscale Simulation
10:15-10:45	Coffee Break
10:45-11h30	Pia Adelroth Proton transfer in the heme-copper oxidases
11:30-12:15	Bertrand Garcia-Moreno Anomalous properties of buried ionizable groups in proteins
12h30-13:30	Catered lunch at TSRC
13:30-14:15	Ramona Schlesinger Proton translocations in channelrhodopsin-1 from <i>Clamydomonas augustae</i>
14:15-15:00	Alexei Stuchebrukhov Principles of redox-driven proton pumps
15:00 -15:30	Coffee Break
15:30-16:30	Discussion
5:30	Group Dinner/Closure
July 13th Friday	Hiking, Departure