

Professor Debbie C. Crans, Colorado State University, COACS Chair-elect 2019
Report on the Adam State Visit, Sep, 18, 2019

COACS had the Periodic Table as a Theme for the year 2019. Professor Eric Scerri lectured at the University of Denver, January 16, at a cosponsored event with Denver University on “A History of the Periodic table.” Over 100 members of the University community, mostly nonscientists, attended and a video link was made available to COACS members. The second periodic table event was held on April 23 at an event celebrating the Colorado Outstanding High School Chemistry Students and Teacher of the Year, at Regis University, Denver Colorado. This event was held in collaboration with the Colorado High School Chemistry Teachers Association (CCTA). Chair Larry Berliner presented “Heroes and Heroines of Chemistry” based on the foundations of the Periodic Table. The event was streamed in real time and video graphed across the state, funded in part from our IPG and Science Café grants for this purpose (see link https://www.youtube.com/watch?time_continue=1817&v=ZTwJYPfFoXA). This event was followed on Sept. 8 by a ACS Career Fair where we recruited 15 new ACS members. On September 18, we sponsored the first “Western Slope” meeting at Adams State University in Alamosa, Colorado with the goal to also program in person at the rural areas of Colorado.

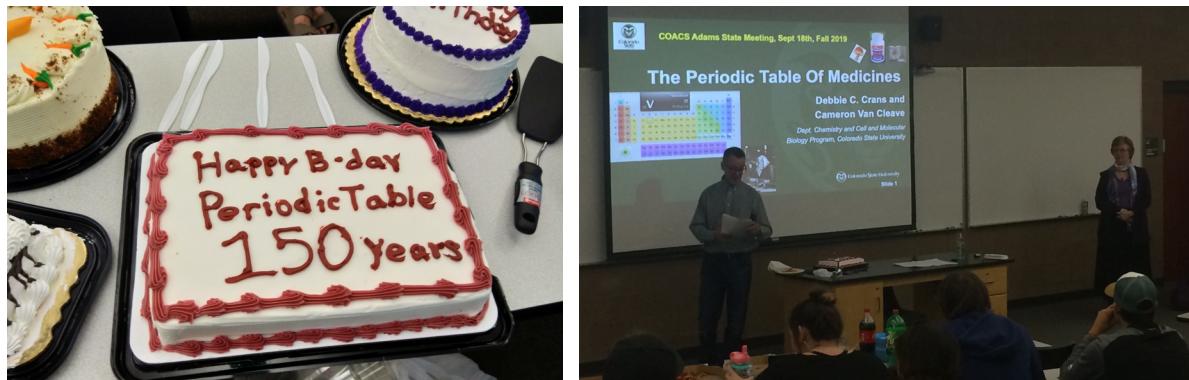
The chair-elect Dr. Crans was invited to the Mendeleev Congress in St. Petersburg, Russia (Sept. 8-12 2019), and presented a keynote lecture on one of her research projects, on menaquinone, a lipoquinone that is an electron transfer donor and accepter in Mycobacteria pathogens such as *Mycobacterium tuberculosis* and *Mycobacterium smegmatis* (NSF-funded project). At this meeting, the 150-year anniversary meeting of Mendeleev’s periodic table was celebrated and Crans was also able to briefly show the new version of the periodic table that was recently reported from her group (Van Cleave & Crans, *Inorganics*, 2019, 7, 111; doi:10.3390/inorganics7090111). These events led to the development of the Colorado ACS (COACS) meeting held at Adams State on Sept. 8. This celebration of the periodic table at Adams State represents the first of an annual Western Slope seminar series initiated by COACS, which will increase COACS activities on the western slope and more remote areas of Colorado. The section has been trying to involve the Western slope more and have had two activities that were web-based involved the Periodic Table and this one visit that was face-to face.

The Crans and Van Cleave team drove from Fort Collins to Alamosa the day before the COACS meeting, and spent the morning preparing for the seminar which included a tour of Adams State Science building and a visit to their amazing fossil and mineral collections, see photo of Cameron Van Cleave and Adam State museum attendant.

Crans and Van Cleave brought several birthday cakes to celebrate the 150-year anniversary of the Periodic Table to share with the seminar participants which included students, faculty and community members.



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The presentation began with introduction of the CSU Professor Debbie C. Crans by Adam State Professor Frank Novotny and after Dr. Crans had presented part of the talk, graduate student Cameron van Cleave took over (see photo above). Then birthday cake was shared with the participants. Then Prof. Crans began the presentation. Initial parts of the seminar showed images from Crans' visit to St. Petersburg at the Mendeleev Congress (see photos below).

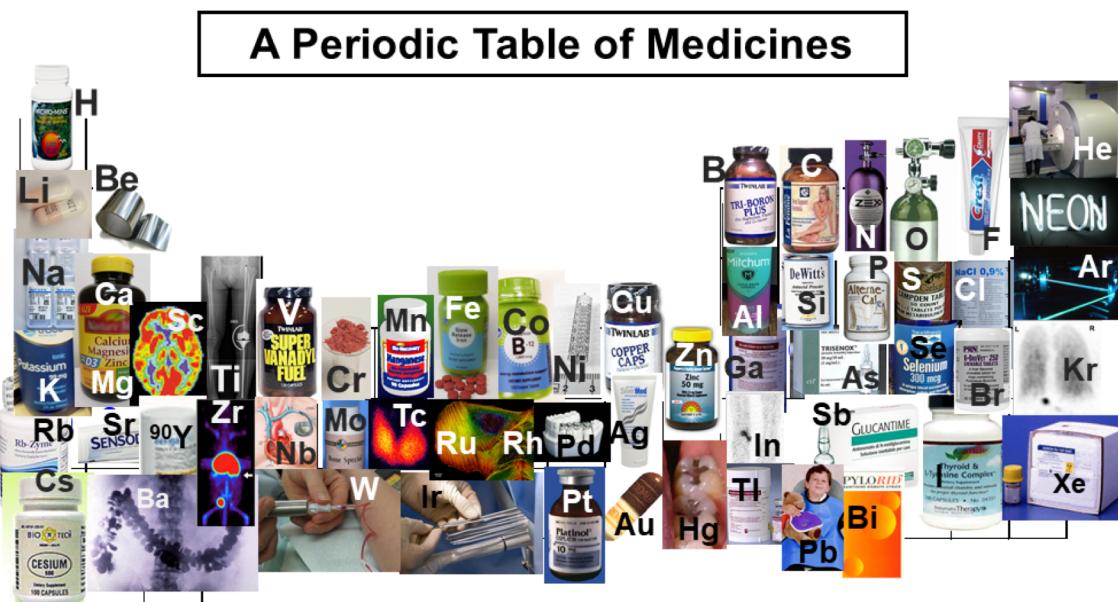


Below the Russian birthday cake presented at the Mendeleev conference as well as a few images from the Mendeleev Congress, including the Nobel Prize Laureate and opening conference plenary presenter Paul Savage from University of Strasbourg addressing the speakers of the Mendeleev Congress, see photos next page.

After showing a number of different periodic tables, the “Periodic Table of Medicines” was introduced and the detailed biological properties of all the transition metals were described. Interestingly, of the 10 first row transition elements, 5 are essential elements (Mo, Fe, Co, Cu, Zn) and 3 others have very interesting properties that can be used effectively in medicine (Cr, V, Ni), leaving only Sc and Ti. Clearly, as one moves across a period the properties of the elements change and of the first transition metal series and, as presented by the Professor Debbie C. Crans and graduate student Cameron Van Cleave, the chemistry of each element is aligned with the medicinal properties and applications of the elements.



Finally, Professor Debbie C. Crans presented the Periodic Table of Medicines that is shown below. Prof. Crans has been using this for years in her classes, however, when Prof. Scerri visited he informed her that it was really unique and that she should publish it so other educators could use it in their instruction hence Crans and van Cleave wrote the manuscript with the periodic table in it (Van Cleave & Crans, *Inorganics*, 2019, 7, 111; doi:10.3390/inorganics7090111).



There were 44 attendees at the event, 9 of which were ACS members, and the participants included one 50-year member of the ACS (Larry Sveum) as well as beginning students, and a range of Adam State faculty such as an English professor at Adam State. In the future, COACS hopes to continue this format in order to reach in-person activities to some of the rural members of the large geographical state of Colorado, which comprises the Colorado Section of the ACS.