24th Annual Conference for the Washington College Chemistry Teachers Association (WCCTA)

FOOD FOR THOUGHT

Sleeping Lady Resort and Conference Center
Leavenworth, WA

October 13th – 15th, 2016

Hosted by Bellevue College (Bellevue, WA)

BELLEVUE COLLEGE

Organizers: Sonya Doucette, Rick Glover, Jennie Mayer, Arlene Williams

Washington College Chemistry Teachers Association
2016 Conference Program at a Glance

Thursday, October 13, 2016	
3:00 pm - 10:00 pm	**Check-in**
4:30 pm– 10:00 pm	**Conference Registration** (Woodpecker)
6:00 pm– 7:30 pm	**Dinner** (Kingfisher Dining Lodge)
8:00 pm – 10:00 pm	**Happy Hour (pub trivia at 8-9pm, board games 8-10pm)** **Informal socializing** (Grotto Bar, hot tub, library, fire pit, etc.) *No-Host Bar*

Friday, October 14, 2016			
7:30 am– 8:30 am	**Breakfast**		
8:45 am– 9:00 am	Welcome – Chapel Theatre		
9:00 am– 10:15 am	**Keynote Address** **Subha R. Das,** Associate Professor, Carnegie Mellon University **The Kitchen Chemistry Sessions: Molecular Cuisine to Make Science Palatable**		
10:15 am – 11:00 am	**Vendor Break**, Salmon Gallery		
	Chapel Theatre	**Woodpecker (food)**	**Flicker**
11:00 am – 11:25 am	Fluorescence of Common Foods (Trisha Russell, Whitworth University)	Science Writing and the Organic Laboratory (Karen Goodwin, Centralia College)	Use of a card sort task to define a progression for coordinating three levels of representation in chemistry (Emily Borda, Western Washington University)
11:30 am- 11:55 am	Food: How to Hook GOB Students' Interest in Chemistry (Janice Koles Gard, Whitworth University)	The Challenges and Successes of Planning and Executing an Interdisciplinary Course: "From the Fire! The Art and Science of Ceramics" (Dharshi Bopegedera, The Evergreen State College)	Organic chemistry roundtable (facilitated by Brett Goldston, Bellevue College)
12:00 pm– 1:00 pm	**Lunch**		

Friday, October 14, 2016			
	Chapel Theater	**Woodpecker**	**Flicker**
1:00 pm–1:25 pm	Beer, Chemistry, and the Undergraduate Laboratory (Aaron R. Moehlig, Highline College)	Using OneNote in the Classroom (Jeffrey Engle, Tacoma Community College)	Prep Chem Roundtable: Outcomes for General Chemistry (Darsi Fouillade and David Reichgott, Cascadia College)
1:30 pm – 1:55 pm	Building Strong S.T.E.M. Foundations In and Out of the Lab Through Industry Partnerships (Toby Astill, Perkin Elmer)	You can lead scientists to the classroom, but can you make them teach - Strengthening a Community of Science Educators in Undergraduate Education (Lindsay Groce, Big Bend Community College and Tim Sorey, Central Washington University)	General Chemistry roundtable (facilitated by Gina Fiorini, Bellevue College)
2:00 pm–2:55 pm	**Vendor Break**, Salmon Gallery		
3:00 pm – 3:25 pm	Building Community in the Chemistry Classroom (Natalie Bjorge, Highline College)	Food Chemistry Workshop: Molecular Cuisine to Make Science Palatable (Subha R. Das, Carnegie Mellon University)	Green Chemistry Rapid Fire Session (Karen Goodwin Centralia College)
3:30 pm–3:55 pm	Inside a Student-Centered Classroom – Building a Community of Learners (Tony St John, Skagit Valley College)		

Friday, October 14, 2016	
4:00 pm – 6:00 pm	***Choose your own adventure!*** *It's 5 Artisan Distillery (Cashmere) – carpool or driving, $5 tour +$5 tasting* *(Meet outside main office for carpools)* Location: 207 Mission Ave, Cashmere, WA 98815 *OR* *Water Quality at Leavenworth Fisheries Complex (Leavenworth) – walking distance* *(Meet at the Icicle Sculpture outside the dining hall)* *OR* *Your own time – relax, socialize, hot tub!*
6:00 pm - 7:00 pm	**Reception - Salmon Gallery** *Sponsored Beverages!* *Hosted Bar – Bring your drink tickets!*
7:00 pm – 8:00 pm	**Dinner**
8:00 pm - 9:00 pm	**Evening presentation – Woodpecker** **Allen Rhoades**, Instructor, Skagit Valley College **"Skagit Valley College Craft Brewing Academy"** *No-Host Bar*
9:00 pm – 10:00 pm	**Informal socializing** (Fire pit at the Grotto, hot tub)

Saturday, October 15, 2016			
7:30 – 8:30 am	**Breakfast**		
	Chapel Theater	**Woodpecker**	**Flicker**
8:30 - 9:00 am	Caramel Chemistry: exploring phase transitions and polymerization (Arwyn Smalley, Saint Martin's University)	Using Google Forms for Lab Data Analysis and Grading - An Interactive Workshop *(*Mary Whitfield and Heather Walsh Edmonds Community College*)*	Workshop: Implementing InterDisciplinary Investigations (IDIs) in General Chemistry (Kalyn Owens, Ann Murkowski, Heather Price, North Seattle College and Anne Johansen, Central Washington University)
9:00 – 9:30 am	Spice-troscopy: A tongue-searing experimental approach to undergraduate instrumental analysis (Rick Glover and Grady Blacken, Bellevue College)		
9:30 - 10:00 am	The Changing Face of Chemistry 121 (Scott Morris and Jenn McFarland Skagit Valley College)		
10:00 – 10:30 am	General, Organic and Biological Chemistry roundtable (facilitated by Rick Glover, Bellevue College*)*		
10:30 - 11:00 am	Break and **Check-out by 11 am**		
11:00 – 12:00 pm	Business Meeting – Woodpecker		
12:00 – 1:00 pm	**Lunch**		
1:00 pm	Meeting Adjourned! Have a safe drive home!		

Program Details

Friday Keynote Address — October 14, 2016

9:00 – 10:15 am — **Chapel Theatre**

The Kitchen Chemistry Sessions: Molecular Cuisine to Make Science Palatable

Subha R. Das

Associate Professor, Department of Chemistry, Carnegie Mellon University

ABSTRACT: The ability to alter and customize the texture and appearance of food and edible ingredients has long been possible through advances in food science and technology. Molecular or modernist cuisine or the popular misnomer, 'molecular gastronomy' that has burgeoned in recent years, is the adoption of ingredients, techniques and equipment typically used in scientific laboratories. These high impact foods and recipes provide a unique opportunity to use the known science of food to engage and teach basic principles and advanced topics in chemistry and biochemistry. The Kitchen Chemistry Sessions is a lecture and laboratory course taught since 2009 that uses specific contemporary 'molecular cuisine' elements to highlight how scientific principles permeate students' everyday life and to enhance students' knowledge of chemistry and the scientific method. The food context provides a motivating opportunity that directs and sustains learning, as students are motivated to learn when they see the usefulness and relevance of what they are learning. Teaching through the real-world context of cooking permits one to apply chemistry and biochemistry to adapt and develop novel recipes and food presentations. The talk will include some demonstrations and highlights from the course.

BIO: Subha R. Das completed his PhD at Auburn University on the synthesis of nucleosides as antiviral agents. Then, as a Howard Hughes Medical Institute postdoctoral research fellow at the University of Chicago, he examined the molecular mechanisms of RNA based enzymes. Over the years, the long hours spent on research and a deep dissatisfaction with cardboard offerings that passed as pizza in the trenches of academia, led him to hone his subsistence skills to maximize flavor in minimal time. Drawing on this and advances in molecular gastronomy, Das created The Kitchen Chemistry Sessions - courses to teach chemistry through the real-world context of food, cooking and molecular cuisine. Besides his courses, Das has organized workshops on molecular cuisine for students in grades four through twelve as well as workshops for K-12 teachers and college. Das and his students' exhibition "Taste of Chemistry" was invited to the Geek Art/Green Innovators Festival in Pittsburgh. An associate professor in the Department of Chemistry at Carnegie Mellon University, Das's research interests lie in the chemistry of nucleic acids and their applications to biochemistry and nanobiotechnology. His laboratory is engaged in biochemical and biophysical analyses of lariat debranching enzyme and splicing that is funded by the NIH and the synthesis and applications of polymer-DNA and RNA hybrids and nanoparticles with novel architectures. His educational goals include communicating and advancing science, particularly chemistry, by making it palatable to a broader audience.

11:00am – 11:25am

Fluorescence of Common Foods (Chapel Theatre)

Trisha Russell, Whitworth University

Many common foods that we use every day fluoresce in a variety of colors. Several examples of fluorescent foods such as peppers, lettuce and bananas will be presented. These examples can be used as demonstrations in class or as laboratory experiments. In particular, banana peels have peak fluorescence of blue-white light when they are at optimum ripeness. This fluorescence can be explored in the lab using either a handheld UV lamp or a fluorimeter. Additionally, comparisons between the fluorescence of different foods such as green peppers and bananas which emit magenta and blue-white light allows for the discussion of different wavelengths of light in the classroom or laboratory.

Scientific Writing and the Organic Laboratory (Woodpecker)

Karen Goodwin, Centralia College

The laboratory report is an integral part of the organic chemistry curriculum. However, students are generally given little to no instruction in proper scientific writing. Last year, I piloted a program to give instruction and guidance in scientific writing in my 2nd quarter organic chemistry class,
culminating in a full formal lab report. The program required no changes to my normal lab curriculum, and resulted in vast improvements in the quality of writing submitted by the students. In this talk, I will explain the program, and show some example student work that indicates the
effectiveness of this method.

Use of a card sort task to define a progression for coordinating three levels of representation in chemistry (Flicker)

Emily Borda, Western Washington University

Expertise in chemistry depends in part on the ability to coordinate three types of representations: macroscopic (observable), sub-microscopic (atoms, molecules, and ions) and symbolic (chemical equations, graphs, etc.). In this presentation, the development, initial validation, and use of a card sort task to measure this "level-coordinating ability" in individuals with varying degrees of formal chemistry training will be described. The sorting task involved a set of nine cards each bearing a first-quarter general chemistry problem. The three types of problems, stoichiometry, mass percent, and dilution, were crossed with the three levels of representation, macroscopic, sub-microscopic, and symbolic, to produce a set in which each type of problem was represented on each level. Students were asked to sort the cards according to the concept needed to solve the problem, and their sorts were analyzed according to the degree to which similar representations or underlying principle were grouped together. A novel method for generating two-dimensional sorting coordinates enabled the development of a progression for level-coordination ability. Findings suggest that, with the exception of graduate students, participant groups on average progressed from sorting by level of representation toward sorting by underlying principle, with increasing levels of formal training in chemistry. Graduate students unexpectedly sorted primarily by level of representation, and some possible explanations for this result will be proposed. The usefulness of the card sort task paired with sorting coordinate analysis as a tool to explore the space between novice and expert behavior is discussed. Finally, potential uses for the task as a formative assessment tool at the classroom and program levels will be proposed.

11:30am – 11:55am

Food: How to Hook GOB Students' Interest in Chemistry (Chapel Theatre)

Janice Koles Gard, Whitworth University

To those of us teaching Chemistry, its importance in our daily lives cannot be overstated. To the pre-nursing student, it is often seen to be a hurdle that stands between them and nursing school. Worse, many have never taken Chemistry previously, and suffer "Chemphobia."

Many of the students are traditional teenagers arriving fresh from high school. At this age, food, fun, and friends rank high in their list of priorities. In our class, food is often the tool used to hook General, Organic, and Biochemistry (GOB) students' interest in Chemistry. Demonstrations with food, group activities performed in class with their friends using bagels, and laboratory experiences using candy, break the ice with these aspiring health professionals and rapidly change their attitudes.

This talk will illustrate several lecture and laboratory examples of the use of food in our two semester GOB sequence: ether bunny "peeps", skittle dimensional analysis, and the Buccaneer (candy) mole lab help ease the students past their initial fears to mature into eager young practitioners that confidently perform organic syntheses and understand the intricacies of biological molecules in the human body.

The Challenges and Successes of Planning and Executing an Interdisciplinary Course: "From the Fire! The Art and Science of Ceramics" (Woodpecker)

Dharshi Bopegedera, The Evergreen State College

Planning and executing an interdisciplinary course that integrates art and science to provide a rich learning experience for students is challenging, even for faculty who teach in an interdisciplinary learning environment such as The Evergreen State College. Working outside their comfort zones and becoming a student of the unfamiliar discipline while developing teaching plans and making meaningful connections between the disciplines for their students is the hallmark of interdisciplinary teaching. Although the rewards are high, so is the time commitment and effort which can result in faculty burnout. Science faculty have the added burden of working with colleagues who may not be familiar with the challenges of teaching science courses that rely heavily on laboratory work and seek to advance students' mathematical and problem solving skills.

In this presentation I will share my experience of designing and implementing an interdisciplinary course that integrated the visual arts and introductory chemistry on the theme of ceramics with the goal of attracting students to the arts and the sciences. I will discuss how this theme served to integrate the disciplines and enabled students to develop artistic skills in the ceramic studio and technical skills in the laboratory while learning the principles of chemistry and the history of ceramics. I will present the studio activities and laboratory investigations that served to explore the materials used and the oxidative/reductive firing processes.

A significant portion of the course was dedicated to engaging students in an independent group project on a range of topics related to ceramics. I will share how the faculty team guided students to develop these projects that served to raise their self-confidence. The culminating experience of presenting these projects to the public during the Annual Science Carnival of The Evergreen State College will also be discussed.

Organic Chemistry Roundtable Discussion (Flicker)

Facilitated by Brett Goldston, Bellevue Colllege

Please join us for a roundtable discussion with colleagues from around the Pacific NW. Bring suggestions for discussion topics!

1:00pm – 1:25pm

Beer, Chemistry, and the Undergraduate Laboratory (Chapel Theatre)

Aaron R. Moehlig, Highline College

Society has been enjoying the product of grain fermentation, what we call beer, at least as far back as ancient Egypt. In the state of Washington alone there are currently 281 (and counting) commercial breweries. It seems the process of brewing has always fascinated people, but little about the process or the chemistry of this type of fermentation has changed over the past few thousand years. Brewing beer has always involved, sometimes by law, the combination and interaction of four ingredients: water, grains, hops, and yeast. This talk will focus on the chemistry that occurs when these four ingredients are combined during the brewing process as well as how the analysis of the carbohydrates, humulones, and color of beer can be incorporated into the chemistry curriculum of a two-year institution. Samples (of ingredients) will be provided!

Using OneNote in the Classroom (Woodpecker)

Jeffrey Engle, Tacoma Community College

OneNote is a free cross-platform application by Microsoft that acts as a digital three-ring binder. It can be used to store notes, pictures, videos, audio recordings, and class handouts. In addition, these notes can be shared between students and faculty, and each notebook is automatically saved in the cloud (via OneDrive).
Over the past two years a series of classes at Tacoma Community College have used OneNote both as a note storage system and an electronic whiteboard. This allows lectures to be projected, recorded and saved while retaining the ability to give “chalk talks”. This method has proved especially useful in organic chemistry courses which rely heavily on arrow pushing, and allows lectures to be pre-recorded for instructors who “flip” some/all of their lectures.
Furthermore, Microsoft has rolled out new features which allows integration of OneNote with course management software and electronic grade books. This talk will explore features and uses of OneNote and will also explore student feedback regarding its use.

Prep Chem Roundtable: Outcomes for General Chemistry (Flicker)

Darsi Fouillade and David Reichgott, Cascadia College

Preparatory Chemistry (CHEM&139) at Cascadia has provided a route for consistent student success in General Chemistry. With changes in our student demographics, the need for this course has increased over the years. Please come to hear some introductory remarks about our curriculum, our focus, our successes and lessons learned, and then share your experiences. The majority of time will be allocated to a round-table discussion.

1:30pm – 1:55pm

Building Strong S.T.E.M Foundations In and Out of the Lab Through Industry Partnerships (Chapel Theatre)

Toby Astill, Perkin Elmer

PerkinElmer's University and College partners continually seek to inspire their students and train them to think analytically. Through industry and market insight, PerkinElmer is able to support this philosophy by providing leading-edge technical support and industrially relevant methods for data collection, data management and data analysis. FTIR UATR Spectroscopy, High Throughput Gas Chromatography, Walk Up Atomic Absorption Spectroscopy and Simultaneous and Thermal Analysis (STA) techniques are highlighted to demonstrate how the latest technologies can improve PNW colleges' positioning as academic STEM leaders. Insight will be provided into resources available to students for career development and also echanisms available for replacing old infrastructure in laboratories and resources available from PerkinElmer's application team that allow revamping of existing experiments. When these refined teaching experiences are combined with cutting-edge analytical instrumentation, students are well-prepared for future opportunities in academia, industry or government in the PNW and around the world.

You can lead scientists to the classroom, but can you make them teach - Strengthening a Community of Science Educators in Undergraduate Education (Woodpecker)

Lindsay Groce, Big Bend Community College and Tim Sorey, Central Washington University

Scientists who have earned an MS or PhD are adept in their content field, but many employed by post-K-12 educational institutions have little training to survive and thrive in teaching as they begin their job. To this end, a course was designed, en-tandem with Big Bend Community College instructors, and delivered at Central Washington University in Winter Quarter of 2016 to prepare MS students in becoming effective and thoughtful teachers of science who support diverse learners through reflective teaching practices that are driven by best practice research-based science teaching methods. Course topics included the role of community colleges in public education, an introduction to collegiate science pedagogy, and practical teaching experience in authentic classroom settings. We will discuss our experiences, offer lessons learned, and suggest improvements for future offerings of this courses. We are interested in fostering better communication, mentorship, and professional development opportunities for all science educators in all areas of content and at various levels of teaching experience. A break out session with pointed dialogue will be facilitated in hopes of strengthening our post K-12 science education communities.

General Chemistry Roundtable Discussion (Flicker)

Facilitated by Gina Fiorini, Bellevue Colllege

Please join us for a roundtable discussion with colleagues from around the Pacific NW. Bring suggestions for discussion topics!

3:00pm - 4:00pm

(3:00-3:25pm) Building Community in the Chemistry Classroom (Chapel Theatre)

Natalie Bjorge, Highline College

Community building and cultural responsiveness in the classroom is important. Many professional development opportunities on our college campuses don't focus on how this is possible in a science classroom. This workshop provides a space to discuss how we can better know our students to meet their needs, and provide a welcoming environment for learning. We will talk about some ideas previously implemented, as well as leave time to brainstorm these and other ideas. Community building in our classrooms is important to learning, and to building a new standard in the chemistry classroom!

(3:30-3:55pm) Inside a Student-Centered Classroom – Building a Community of Learners (Chapel Theatre)

Tony St John, Skagit Valley College

Over the past two years I have been a part of an NSF grant called "Change at the Core" in partnership with Western Washington University and Whatcom Community College. Through this grant I have completely redesigned my General Chemistry curriculum to be more "student-centered." Gone are the PowerPoint presentations and now every "lecture" period is filled with activities where the students are working together and sharing their knowledge.

My main goal in making these changes is to build a community of learners inside of my classroom. I believe the main benefit of "flipping" has been to change the culture from passive to active. While at the same time being cognizant of different personalities and making sure that every student feels safe.

In this talk I will give a brief overview of how my classroom functions on a day-to-day basis and share some of the evidence that this approach is student *friendly* and that it really works!

(3:00-4:00pm) Workshop: Molecular Cuisine to Make Science Palatable (Woodpecker)

Subha R. Das, Carnegie Mellon University

The ability to alter and customize the texture and appearance of food and edible ingredients has long been possible through advances in food science and technology. Molecular cuisine or the popular misnomer, 'molecular gastronomy' that has burgeoned in recent years, is the adoption of ingredients, techniques and equipment typically used in scientific laboratories. These high impact foods and recipes provide a unique opportunity to use the known science of food to engage and teach basic principles and advanced topics in chemistry and biochemistry. This workshop will highlight specific contemporary 'molecular cuisine' elements, show how they draw on science concepts to create novel (edible) products and feature useful and practical tips for engaging students through the real-world context of food ingredients and their cooking or manipulation.

(3:00-4:00pm) Green Chemistry Rapid Fire Session (Flicker)

Karen Goodwin, Centralia College

This session would consist of 4 or 5 - 10 minute (or less) presentations. I will contact people via the WCCTA to ask for volunteers. Each presentation will be 10 minutes including questions, and will be timed by a moderator (I will volunteer to act as moderator). At the end of the presentations, if time remains, the presenters will participate in a panel-style session to answer any additional questions or to talk more generally about green chemistry in the curriculum.

8:00pm - 9:00pm

Skagit Valley College Craft Brewing Academy (Woodpecker)

Allen Rhodes, Skagit Valley College

ABSTRACT: With the industry expected to grow, demand for knowledgeable brewers has never been higher. If you've considered entering the brewing industry, or want to purse a wider knowledge of the business itself, join the craft brewing program today!

The Skagit Valley is becoming a hub for the Craft Brewing Industry. The valley is home to nine breweries (including the college brewing lab) and two distilleries, in addition to a craft grain maltster. Local farmers are growing malting grade barley, wheat, and other brewing adjuncts. We will discuss how the Skagit Valley College is participating in the progress, growth, and future of the Skagit Valley relative to this vibrant industry. A tasting of beers brewed in the Skagit Valley with locally grown grains will finish the evening.

BIOGRAPHY: Allen Rhoades is the principle owner and managing partner of the Rockfish Grill, Anacortes Brewery, and H2O nightclub in Anacortes. Allen and his wife Lisa make their home in Anacortes. They have three grown boys, one a senior at Western Washington University, and two who have graduated college, and live and work in the Seattle area. Prior to opening his own businesses, Allen spent sixteen years working for the Boeing Company, in Seattle. He attended the University of New Mexico, where he received a Bachelor of Science degree in Mechanical Engineering. He is the Chairman of the Washington Beer Commission, and a member of the Fidalgo Fly Fishers. His newest endeavor is developing and teaching the Craft Brewing Academy at the Skagit Valley College. He and his wife enjoy travelling, and spending time in the outdoors hiking, kayaking, and fly-fishing.

You can find more information about the Skagit Valley Craft Brewing Academy online at http://www.skagit.edu/

(8:30-8:55 am) Caramel Chemistry: exploring phase transitions and polymerization (Chapel Theatre)

Arwyn Smalley, Saint Martin's University

Both introductory chemistry and non-majors chemistry classes call for a wide range of topics in the lecture and laboratory setting. Many subjects can be applied to concepts that are already familiar to the students; this enhances understanding and learning. Using food to illustrate chemistry makes the science fun, accessible, and relevant. This laboratory activity to prepare caramel candy requires careful tracking of temperature, which leads to the observation of the phase transition temperature of water, and demonstrates the concept that phase transitions occur at constant temperature. The activity also allows for qualitative exploration of polymerization and Maillard reactions through the students' observations in how the mixture changes as the reaction progresses. Through this activity students can learn some basic organic chemistry, including the organic structures of sugars and proteins, some functional groups, the basics of these chemical reactions and condensations reactions in general. I will share the recipe and laboratory experiment, suggestions for success in using them, and discuss student learning.

(9:00-9:25 am) Spice-troscopy: A tongue-searing experimental approach to undergraduate instrumental analysis (Chapel Theatre)

Grady Blacken and Rick Glover, Bellevue College

When developing our instrumental analysis labs at Bellevue College we wished to incorporate inquiry-based lab activities, particularly, with an emphasis on students designing and executing experiments. To motivate students with a lab structure that differed from the traditional "cookbook chemistry" we incorporated themes they could connect to. Two examples of these labs related to food analysis: measuring the concentration and activity of capsaicin in hot peppers and antioxidants in vegetables. These labs were Designed to introduce students to the concepts of liquid chromatography and spectroscopy respectively. In the first experiment, students measured the concentration of capsaicin, which was extracted with ethanol from various blended peppers. The ethanol extracts were filtered and analyzed by reversed phase, high performance liquid chromatography with absorbance detection at 280nm. The concentration of capsaicin was determined by external standard calibration. In the second experiment, students measured the activity of horseradish peroxidase, which was extracted with cold water from different blended vegetables. The aqueous extracts were then analyzed for peroxidase activity using 3,3`, 5,5`-tetramethylbenzidine (TMB) as a peroxidase substrate. The oxidation of TMB by peroxidase was monitored by an absorbance peak at 655 nm. Students performed relative quantitation of enzyme activity to compare the relative peroxidase levels in different foods. These labs also gave students a practical understanding to aspects of quantitative analysis such as developing calibration curves, interpreting data and optimizing separation and detection protocols for analysis of complex samples.

(9:30-9:55 am) The Changing Face of Chemistry 121 (Chapel Theatre)

Scott Morris and Jenn McFarland, Skagit Valley College

Chemistry 121 (Introduction to Chemistry) at Skagit Valley College serves a diverse audience. All of our allied health programs (dominated numerically by the pre-nursing program) take the course, as do students intending to carry on with Chem&131. In addition, it is required of students in our (4-year) Environmental Conservation Program where it serves as a prerequisite for Chem&301 Environmental Chemistry. We have also learned
that many students intending to pursue transfers degrees are often advised to enroll in Chem&121 as a "remedial" class if they have not had any chemistry recently. All these various niches pose different curricular challenges in what is

already a course that lacks depth and linkage. We propose to frame three general questions to the group: 1) what are the essential Big Ideas in Chem&121? 2) What traditional course content can be considered lower priority? And 3) are there essential laboratory skills the course should teach, and if so, how can they be assessed?

TWO-HOUR WORKSHOPS, 8:30-10:30

(8:30-10:30 am) 2hr Workshop: Using Google Forms for Lab Data Analysis and Grading - An Interactive Workshop (Woodpecker)

Mary Whitfield and Heather Walsh Edmonds Community College

At Edmonds Community College, we have begun using Google Forms to collect student's lab data. This allows us to immediately grade lab results for both accuracy and the correctness of the calculations. Using Excel we complete the calculations using the data the students enter, and display the results color-coded based on percent error. Students get feedback on their lab results within 24 hours of submission and have a chance to correct their calculations. Since implementing this program we have found that students are more invested in their lab results, and are more attentive to detail in their calculations. And it saves us time grading too!

We are planning an interactive workshop where participants learn how to build their own forms, as well as the Excel spreadsheet that analyzes and codes the data. Please bring your own laptop if you want to participate.

(8:30-10:30 am) 2hrWorkshop: Implementing InterDisciplinary Investigations (IDIs) in General Chemistry (Flicker)

Kalyn Owens, Ann Murkowski, Heather Price & Anne Johansen
North Seattle College & Central Washington University

For the last decade, North Seattle College has transformed introductory science courses to be interdisciplinary and to provide course-based research experiences early in the post-secondary curriculum. This work originated as a program (Atoms to Ecosystems) that combined the year-long chemistry and biology series into a single, interdisciplinary learning community. To broaden the number of students impacted by these experiences, we recently developed a two-prong approach (classroom and lab) to incorporate similar high-impact practices into traditional chemistry courses. Interdisciplinary investigations (IDIs) have now been embedded throughout our general chemistry series. The design process is centered on opportunities for students to CONNECT to prior knowledge, EXTEND out to embrace knowledge from other disciplines and scientific literature, and address a CHALLENGE involving a complex problem that requires both chemistry and biology to understand. Essential to this approach is establishing classroom routines that value and promote thinking in a collaborative learning context. In this short workshop, we will provide participants with an overview of the new curriculum, progress through one of the interdisciplinary investigations (IDIs), use a rubric to analyze student drawings as a means to more deeply engage with how an interdisciplinary learning environment promotes meaningful thinking opportunities, and engage in small group discussion about the value of this approach. The curriculum will be made available for implementation at other institutions and our team is interested in facilitating this process.

The Puget Sound Section of the American Chemical Society

We are proud to participate in the Vendor Session and sponsor two speakers at the 2016 WCCTA conference. Please connect with Executive Committee members attending this conference. Let us know how we can serve you better and partner with us to enrich our chemistry community.

Below are our key events and their contacts. Most events are free of charge. Please join us with your students!

Event	Contact Person	When
Annual Career Event	Dharshi Bopegedera	Feb 22 2017 (reg by Jan 22)
Annual Undergraduate Research Symposium	Neal Yakelis	April 2017
Annual Pauling Symposium and Award	Mark Wicholas	Nov 12, 2016 (reg by Nov 4)
Scholarships to students & Chemistry Olympiad	Clarita Bhat	February - April
High School Teacher Award	Clarita Bhat	February - April
Tour Speaker events	Cheryl Bick	Ongoing
Women Chemists Retreat	Sarah Vorpahl	May
Serving the community	Despina Strong	Ongoing
National Chemistry Week	Roxanne Hulet	October
Awards to Chemistry/Science Clubs	Despina Strong	Ongoing
Social Events	Carole Berg	Ongoing
Chemists Celebrate Earth Day	Karen Goodwin	April 22, 2017
Sustainability Committee Work	Charity Lovitt	Ongoing
Public Relations	Neal Yakelis	Ongoing
Younger Chemists Committee Work	Jonathan Clark	Ongoing

The Executive Committee of the Puget Sound Section of the ACS meets on the **second Monday of each month from 7:00-8:15 PM at North Seattle Community College.** Please come and share your ideas. Join any committee that piques your interest!

Please announce the following awards to your students so we can broaden the pool of candidates. Applications are available at: http://pugetsound.sites.acs.org/scholarshipsandawards.htm

- $1,500 scholarships for college level students at 2-Year and 4-Year Colleges
- Grants for Student Affiliate Chapters

Online Resources for the Puget Sound Section

Section's website	http://pugetsound.sites.acs.org
Leave us a message	http://pugetsound.sites.acs.org/askusaquestion.htm
Job Page	http://pugetsound.sites.acs.org/jobsandcareerresources.htm
Education & Olympiads	http://pugetsound.sites.acs.org/educationolympiad.htm
Facebook	https://www.facebook.com/AmericanChemicalSocietyPugetSoundSection
To subscribe to the Section email list	www.chem.plu.edu/mailman/listinfo/puget-sound-acs-news

To become a member of the ACS Puget Sound Section for only $10

Please collect an application from the ACS Table or contact Carole Berg (cberg@bellevuecollege.edu)

ACS Chemistry for Life™

Linus Pauling Medal Award

Pacific Lutheran University will be hosting the Linus Pauling Symposium on Nov. 12, 2016. The award recipient will be Dr. Timothy M. Swager (John D. MacArthur Professor, Massachusetts Institute of Technology), and the symposium will include talks by Dr. Colin Nuckolls (Columbia University), Dr. Malika Jeffries-El (Boston University), and Dr. William Dichtel (Northwestern University).

Registration is now open for the 2016 Pauling Symposium and includes the following options: symposium (no cost), undergraduate / graduate / post-doc poster session (no cost), and evening banquet tickets ($35 non-student and $20 student) **Deadline:** Friday, November 4th, 2016.

For more information and registration, please see the following web page: http://www.plu.edu/chemistry/pauling2016/

ACS Chemistry for Life™

ACS Puget Sound Section "Careers in Chemistry"

February 22nd 2017, 1-5 PM

Food and Drug Administration (FDA)

22201 23rd Drive SE, Bothell, WA 98021

http://www.fda.gov/ScienceResearch/FieldScience/ucm258929.htm

Recommended for all undergraduate science students

Free admission and open to all

All participants MUST register by January 22, 2017

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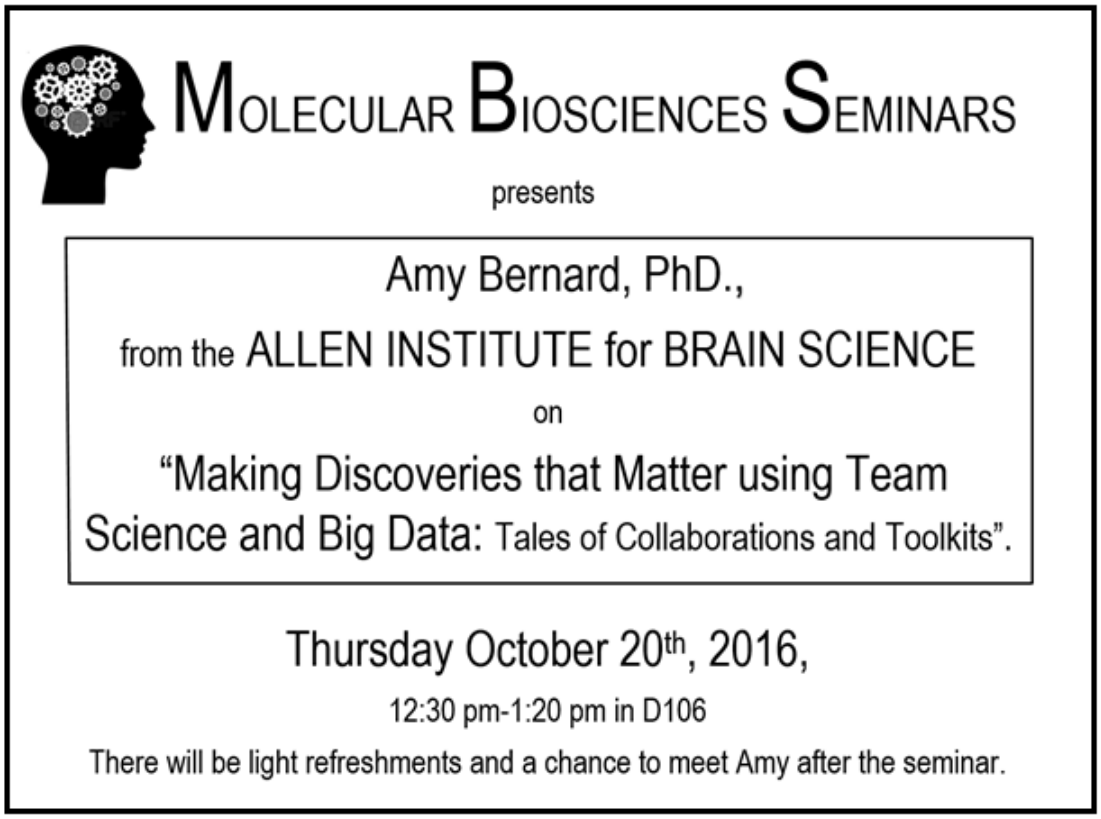

WCCTA Network News

Please contact faculty listed if you'd like more information!

Bellevue College (Jennie Mayer)

The chemistry department now offers biochemistry I and II (CHEM 405/406), Undergraduate research in chemistry (CHEM 272) and Analytical and Instrumental Analysis (CHEM 275). CHEM 405/406 and CHEM 275 are part of the new AAS-T in Molecular Sciences Technician or four year BAS Molecular Biosciences Degree, two new programs offered for students to become technicians and scientists in the biosciences. We thank Jacqui Drak for her long hours and dedication to get this program created! For more information: http://www.bellevuecollege.edu/molecularbio/

We are pleased to welcome Dr. Grady Blacken as our full-time instrumental technician. Grady runs our instrumental lab and supports the curriculum by maintaining and troubleshooting our instruments and creating or adapting labs to use in the classroom. He currently supervises an old HPLC, two FT-IR, Anasazi 90MHz NMR, refurbed triple quad and ion trap LC-MS, and GC-MS. Yes, he is busy! We are currently looking for ways to make this a permanent position, with the help of our new RISE (Research Innovation Service Experiential) Learning Institute.

Chem Club and Docs and Dents are alive and well, thanks to the continued dedication of Carole Berg! Our summer accelerated CHEM&161/162 and CHEM&261/262/263 series are still alive and well. If you know of students who need these courses in the summer, please send them over!

At WCCTA last year, I presented a session on my ChemShare project – a repository I am building of classroom materials that work! I am still in the process of its creation but if you are interested in updates or wish to become a part of the project, please email me. I will send out an update on this soon. Thanks to those who have already contributed!

Last summer, our VPI retired and our President resigned. We're officially part of the club of rotating administrators! Also our full-time tenure-track faculty member Natalia Dunn moved to Yakima to join YCC's chemistry department. We congratulate them (but do we forgive?!) :) We miss her, but will start a search for another FT tenure-track faculty this year. We will announce the position on the WCCTA listserv.

Centralia College (Karen Goodwin)

I am developing a 1 credit "study skills for the physical sciences" with our physics teacher. We have 8 students enrolled, and they seem to already be benefiting from lessons like "how to utilize a science textbook" and "problem solving in the sciences".

I have seen some very positive outcomes from a "chemistry boot camp" that I offer before the beginning of fall quarter. Since we don't enforce prerequisites, it gives students a chance to see what they ACTUALLY will need to know to be successful in Chem 161. I have had an increase in overall GPA, as well as increased retention since starting that program.

Central Washington University (Bob Rittenhouse)

The Department of Chemistry at CWU offers ACS-approved BS degrees in Chemistry and Biochemistry. We have approximately 115 majors in our programs and graduate 15 - 25 majors per year. We also have an active MS program that confers about 4 degrees per year. Undergraduate research is a major emphasis in our department, and nearly 160 students have participated in research over the last five years. These students have presented at regional, national and international conferences and routinely appear as co-authors on peer-reviewed publications.

Updates to our general chemistry curriculum include a third quarter general chemistry honors lab (CHEM 193LAB) for students who have consistently performed at quarterly GPA of 3.0 or greater in the first two quarters.

Clark College (Nadine Fatteleh)

Clark has just opened a state-of-the-art STE(M) building, housing Chemistry, Biology, Physics and Engineering. We are still moving in, getting furniture for the auxiliary spaces, and trying to determine optimal storage configurations in our labs, but the building is beautiful and we walk across a periodic table floor every day. We intentionally built in many student study spaces – large rooms for group study and office hours (the Th-In-K Ta-N-K), smaller rooms and hallway bump-outs, all to foster collaboration amongst all building occupants.

Clark is also partnering with Portland State University on an NIH funded project called BUILD EXITO. This is an innovative undergraduate research training program that prepares students for successful research careers in biomedical, behavioral, clinical, health and social sciences.

Additionally, we were pleased to hire Dr. Rosa Grajczyk as a tenure-track faculty member this year!

Lane Community College (John Thompson)

We have revised our CH106 to be an introductory organic and biochemistry course and are teaching the new course this winter and spring. This should be a better fit for our students than the old approach where we had separate courses for introductory organic and biochemistry.

We have added a hybrid component (using Moodle) and 1 credit hour to our first quarter general chemistry course which is a pre-laboratory component with readings, technique information and a pre-laboratory assignment that must be brought to lab as a lab pass before the experiment can be started. This was quite successful and we are now developing the same for the second and third quarter of general chemistry.

We have hired several new part-time faculty in chemistry and are working with our Faculty Professional Development office to offer a mentoring program to them using a program we call teaching pairs. This should significantly improve on the usual lack of mentorship that tends to happen.

This year we are doing our program review for the college and we will be using the ACS tool as much as possible in this process. We would be happy to receive advice with those who have completed this tool and we will be happy to share are experience in the future.

Skagit Valley College (Roxi Hulet)

Skagit Valley College received a $75,000 grant from Shell to provide full scholarships (tuition and housing) for high-achieving first generation students in science. Students will be matched with a faculty mentor in their area of interest, they will participate in a cohort designed to support first generation underrepresented students, and they will be paid to perform research during the summer between their first and second year.

SVC faculty have also been participating with Whatcom Community College and Western Washington University in a partnership designed to improve the quality of instruction in our majors STEM courses, including general and organic chemistry. Come see Tony St. John's talk to learn more about what we are doing!

South Puget Sound Community College (Marie Dunn)

We successfully changed our General Chemistry (Chem&161) prerequisites! Thank you to everyone who generously answered my requests for information. We couldn't have done it without you! Our prerequisites are now Chem&139 (or 1 year of high school chemistry) AND Math&141 (pre-calculus).

We have THREE new courses this year : (1) Chem&139 (General Chemistry Prep), (2) " Introduction to Scientific Research" (UGR 214): Prepares students to successfully complete their own scientific research project by introducing the use of the scientific method, ethics, research methods, proposal writing, and presentation techniques. Prospective students should have completed or be enrolled in CHEM& 161, PHYS& 221, BIOL& 211,or BOT 210. (3) "Independent Research" (UGR 294): Provides a framework for students to design, carry out, and present their own scientific research project in collaboration with peers and mentors.

We received a "Collaborative Opportunities Grant" from the ACS to help fund the student research projects and cover expenses related to the end of year poster session. Our partners are Saint Martin's University, Department of Ecology, and Dragon Analytical Laboratories.

University of Washington, Tacoma (Meg Henderson)

UWT is celebrating our new Biomedical Sciences Program with a program on Nov.7th, 5:30-7:30 pm. To accommodate this new program, a historical building is being refurbished with lab and office space.

The Chemistry team here at UWT plans to promote this year's National Chemistry Week theme of "Solving Mysteries With Chemistry" by hosting an event where an in-house produced movie featuring our very own chemists will set the scene for "The Mystery of a Fish Die-Off in the Thea Foss Waterway." Students will then carry out hands-on chemistry activities to solve this mystery. We hope to take this activity "on the road" to local middle schools during the rest of the year.

FACULTY JOBS

UW Tacoma is launching a competitive search for another chemistry lecturer. The hiring process will take place this year with the position beginning in Fall of 2017. During Winter and Spring quarters of this academic year (W17 and S17) we anticipate needing a part-time lecturer to teach one class each quarter.

Bellevue College anticipates an opening for a full-time tenure track chemistry faculty starting fall 2017. Will send job announcement to wccta.org.

Big Bend Community College will have an opening for a full-time tenure track chemistry instructor starting in the fall of 2017. Look for a job posting in January 2017. Anyone interested can send an email to John Peterson, johnp@bigbend.edu and I will make sure you are notified when the position is officially opened.

Cascadia College will be conducting a search for a full-time tenure track chemistry faculty position. The position will begin fall 2017. Please watch for an announcement and job description to be posted sometime in November-December at http://www.cascadia.edu/discover/about/jobs/

Centralia College has an IMMEDIATE need for an adjunct (and may be able to utilize someone currently in a master's or PhD program) to teach chemistry labs at Centralia College. This need may extend over several quarters, and may eventually transition into a full time position.

Edmonds Community College is sad to lose Nick Buker unexpectedly last year and hope to have a FT position open for next Fall. We are welcoming Margaret Larousse all the way from New York as our FT Temp for this year. CONTACT: MARY WHITFIELD

Lane Community College (John Thompson)
Our chemistry lab preparer is retiring in December. We will have a position posting up shortly (https://jobs.lanecc.edu/) and we will be hiring as quickly as we can so that our new lab preparer can receive some training before our current preparer retires.

South Puget Sound Community College (Olympia, WA)
We are always accepting applications for adjunct faculty. We are a growing department and hope to add a full time, tenure track position soon. Contact: Marie Dunn, Chemistry Professor
South Puget Sound Community College, mdunn@spscc.edu (360) 596-5274

2016 WCCTA Sponsors/Vendors

Thanks and gratitude to all the Sponsors/Vendors that participated this year. Your presence, door prizes and sponsorship are greatly appreciated. A special thanks to **Cengage** and **Pearson** for hosting the Friday evening social, Pearson for the gift cards, and Restek for a generous column!

This year's supporting cast:

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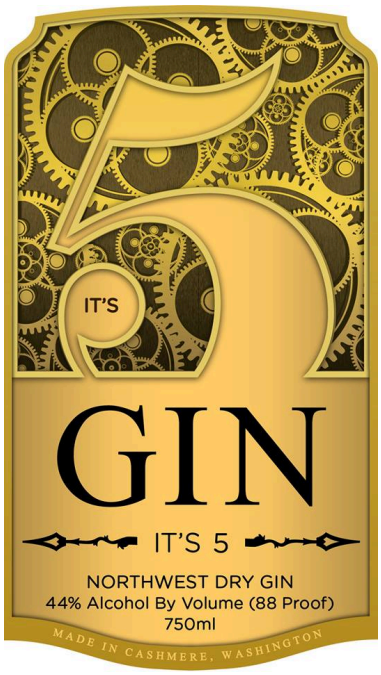

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And our thanks to YOU for your attendance at WCCTA 2016!

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