



Welcome!

We would like to offer a warm welcome to our new graduate students of Academic Year 2017-2018:



Moneer Arabiyat



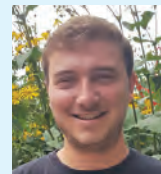
Robert Bavisotto



Fatoumata Diawara



Rebecca Dominguez



Alexander Drena



Nicholas Hopper



David Koltermann



Victoria Mandella



Vilashini Rajaratnam



Shawn Salske



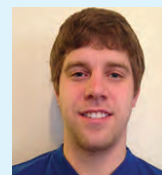
Malati Thapa



Timothy Trinklein



Alexander Vincent



Nicolas Zahn

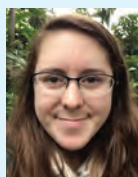
(Gabrielle Grimes and Trevor Melkonian are not pictured.)

The graduate students are diving head first into coursework, research, and teaching discussion and laboratory sections. Keep up the good work!

We are also excited to welcome our fantastic new staff members. Dr. Anna Benko is the new Manager of the Shimadzu MS facility, Goldie Gibbs is now the Undergraduate Coordinator, and Ray'netta Pierce joins us as a Laboratory Technician.



Anna Benko



Goldie Gibbs



Ray'Netta Pierce

From the Chair's Desk



Joe Aldstadt

Dear Friends of the Department of Chemistry & Biochemistry,

As another academic year approaches completion, you will find in the following pages that we've had another busy and productive year.

Before I get to upcoming events, we bid farewell to Professors Dennis Bennett and Peter Geissinger. Peter is now the Dean of the College of Science at Eastern Oregon University while Dennis is enjoying his retirement near Chippewa Falls. We miss both — for their scholarship, leadership, and collegiality.

This past September, we hosted the UW System Chemistry Faculties Meeting and, earlier this month, for the fourth time, we hosted the Wisconsin Science Olympiad State Competition. The former had over 100 attendees while the latter attracted about 1,500 middle- and high school students. These events were resounding successes — we thank Dr. Kristen Murphy for leading the effort in organizing the Faculties Meeting and Dr. Anja Blecking for the Olympiad.

Note that next month, we are separating our annual Chemistry Department Awards Day and Spring Research Symposium to allow undergraduates to more readily attend the former. Awards Day will be held on May 11th to coincide with our annual Sosnovsky Lecture, whereas the Research Symposium will be held following final exams on May 22nd.

We hope that you are able to attend these events, and please keep in touch so that we can continue to brag about our terrific grads!

Sincerely,

Joe

Undergraduate Student Spotlight: Emily Ortega



Emily Ortega

Not all of the undergraduates carrying out research in the Chemistry & Biochemistry Department started at UWM with chemistry in mind. Emily Ortega is a junior majoring in Biological Sciences who began working as a volunteer in Dr. Dietz's analytical chemistry lab last fall. This semester, with financial support from the SURF Program of the Office of Undergraduate Research, Emily has continued her work on evaluating various plant-derived "green solvents" as the basis for new, environmentally-friendly solvent extraction processes for the removal of toxic dyestuffs from wastewater. Dyes have proven to be an especially problematic class of pollutants, both in terms of the quantities released to the environment and the difficulties in their recovery. Each year, textile mills discharge millions of gallons of dye-laden effluents into lakes and rivers, leading to significant environmental damage.

Emily first became interested in the issue of water quality as a volunteer in Flint, Michigan, following that city's well-publicized problems with lead contamination in its drinking water. "For most of my life", she said, "I just thought that I'd be a marine biologist and study dolphins and jellyfish, but with pollution and climate change, that just didn't seem like enough." While the biological aspects of aquatic systems continue to interest her, the issue of water pollution has taken on much greater importance. "If we don't fix some of the damage we've already done to these systems, there won't be any biology left to study. To me, there seemed to be a direct link between my interests and the work of Dr. Dietz and his team."

After completing her Bachelor's studies next year, Emily plans to attend graduate school, where she hopes to build on her research experiences with the Dietz group and to pursue studies that blend her interests in water policy, marine ecology, and water quality.

2017 Summer & Fall Doctoral Degrees

Heather Adams "Tribological Study of the System of Methyl Thiolate on Copper Foil by Mass Spectrometry, Auger Spectroscopy, and Friction Measurements" (Tysoe Group)

Shamsul Ahmed "Short Synthesis and Biological Evaluation of 5-Chloro-7-benzoyl 2, 3-dihydrobenzo[b] furan-3-carboxylic acid (BRL-37959) and its Analogs" (Hossain Group)

Margaret Guthrie "Development of Preclinical Assays Based on Tandem Mass Spectrometry for GABAA Receptor Modulators" (Arnold Group)

Lanlan Han "Structure-Function Relationships in Bacterial Regulatory Proteins and an Enzyme Involved in Antibiotic Biosynthesis" (Silvaggi Group)

Jennifer McGarry "Probing the Interaction of Nitric Oxide with Cytochrome C554 from *Nitrosomonas europaea*" (Pacheco Group)

Sandra Simon "A Theoretical Analysis on the Zintl-Klemm Concept and its Extensions" (Bennett Group)

Shalini Srinivasan "Persistence in STEM: Development of a Longitudinal Model Integrating Self-Efficacy, Outcome Expectations and Performance in Chemistry Gateway Courses" (Murphy Group)

Theodore Thuening "Investigation of Catalytic Coupling and Oxidation Reactions on Gold, Palladium, and Gold-Palladium Alloy Surfaces" (Tysoe Group)

Veera Venkata Naga Phani Babu Tiruveedhula "Part I - Development of a Two-Step Regiospecific Synthetic Route for Multigram Scale Synthesis of β -carboline Analogs for Studies in Primates as Anti-Alcohol Agents. Part II - Design and Synthesis of Novel Antimicrobials for the Treatment of Drug Resistant Bacterial Infections. Part III - A Novel Synthetic Method for the Synthesis of the Key Quinine Metabolite (3S)-3- hydroxyquinine" (Cook Group)

Jaclyn Trate "Integrating Scale-Themed Instruction Across The General Chemistry Curriculum and Selected In-depth Studies" (Murphy Group)

James L Wankowski "Studies on the Extraction of Metal Ions into Quaternary Ammonium- and Pyridinium Based ILs" (Dietz Group)

2017 Fall Master's Degrees

Mark M Yerukhimovich "New Direct Acting Anti-Virals Inhibiting Hepatitis C Virus Helicase and Insights Into How ATP Fuels Helicase Action" (Frick Group)

Graduate Student Spotlight: Joseph Labeots



Joe Labeots

Collaboration with local industry has been one of our strengths for many decades. This tradition continues, as Dr. Schwabacher and Dr. Aldstadt recently began a two-year Small Business Innovative Research (SBIR) project, sponsored by the National Science Foundation, with AquaMetals, LLC of Brookfield, WI. During Phase I, Dr. Schwabacher and Dr. Geissinger collaborated with AquaMetals to develop a novel chemosensor-based method for determining toxic metals in industrial wastewater process streams at low levels in real-time. Upon the conclusion of Phase I, Dr. Geissinger (alas!) departed for Eastern Oregon University, where he is now the Dean of the College of Science, Technology, Mathematics & Health Science.

A key member of the SPIR team is Joe Labeots, a Ph.D. student majoring in physical chemistry. Formerly one of Dr. Geissinger's students, he is now co-advised by Dr. Schwabacher and Dr. Aldstadt. As part of the project, Joe focuses on spectrophotometric studies of the complexation reaction between various metal analytes and the new chemosensor dyes developed by the Schwabacher Group. For Phase II, now underway, the goal is to develop a prototype continuous flow analysis (CFA) instrument for commercialization by AquaMetals. Joe began his studies in September 2014, following completion of a BS in Chemistry at Winona State University. In addition to his research prowess, Joe has done quite well in our program, both in his studies (3.9 GPA) and as one of our top TAs. Joe has also tutored in the Chemistry Supplemental Instruction program, an initiative that has been an overwhelming success since its inception in 2016.

Regarding the impact of his research, Joe observes that "these metal sensors benefit industry by saving them money, but they also allow real-time measurements by CFA that can help limit detrimental effects to the environment." Furthermore, he notes that he "enjoys the challenge of research and the collaboration that occurs within and outside of the department to overcome obstacles." Joe's success as a student, teacher, and researcher epitomizes the comprehensive approach to which we strive to realize in our graduate program.

Dr. Kristin Murphy Wins 2017 Rising Star Award

Dr. Murphy has been recognized for her progress in scientific enterprise. She is one of six recipients of the 2017 Rising Star Award presented by the Women Chemists Committee of the American Chemical Society (ACS). Dr. Murphy, who specializes in assessments, is the Director of the ACS Examinations Institute and has been an associate professor at UWM since 2008.



Award Recipients
(Dr. Murphy is center-left.)

The award is for female scientists who demonstrate outstanding promise and contributions to their respective fields. The Women Chemists Committee strives to increase participation and retention of women in chemical sciences and advocate for, provide leadership to and promote professional accomplishments of women in the field.

She presented her work at the ACS national meeting

in New Orleans in March.

To read the full article regarding her accomplishment, go to <https://bit.ly/KMRisingStar>.

Save The Date

Sosnovsky Lecture Series - Dr. Juswinder Singh from Avila Therapeutics: Dr. Singh is a world-renowned computational chemist and structure-based small molecule drug designer, developing methods that have been successfully applied in the discovery of multiple pharmaceutical compounds, several of which are now in clinical development. His work is titled "A Revolutionary Approach to the Treatment of Chronic Lymphocytic Leukemia with Covalent Drugs." The lectures will occur on **May 10th at 2:00 pm and 11th at 3:00 pm in CHM 180.**

Awards Day and Symposium: Graduate and undergraduate students have the opportunity to present their research and receive feedback and recognition for all the effort they put forth. Please join us in celebrating our students' hard work and view the incredible showcase of undergraduate and graduate research. **Awards Day will be on May 11th in CHM 180 and the Symposium will be on May 22nd in the UWM Union's Fireside Lounge.**

Recognition Received at UWM Research Foundation Reception

The University of Wisconsin-Milwaukee Research Foundation hosted its annual Partner Reception at the University Club on March 1, 2018. A highlight of this annual event is recognition of inventors on patents that issued during the past year.



Left to right: UWM Chancellor Dr. Mark Mone, Dr. Micheal Rajesh Stephen, Dr. Alexander Arnold, Dr. Douglas Stafford, and UWM Provost Dr. Johannes Britz.



This year, four U.S. patents were issued with inventors from the Department of Chemistry & Biochemistry. These included: “Cysteine and cystine prodrugs to treat schizophrenia and reduce drug cravings,” U.S. patent 2,714,226, and “GABAergic receptor subtype-selective ligands and their uses,” U.S. patent 9,597,342, Inventor, Dr. James Cook, Distinguished Professor; “Native SDS-PAGE and methods of use,” U.S. patent 9,709,526, Inventor, Dr. David Petering, Distinguished Professor; and “Development of a GABAA agonist to control airway hyperresponsiveness and inflammation in asthma,” U.S. patent 9,879,020, Inventors, Dr. Douglas Stafford, MIDD Director, Dr. Alexander Arnold, Associate Professor, Dr. James Cook, Distinguished Professor, and Dr. Michael Rajesh Stephen, Research Associate. All of these patents arose from research in faculty laboratories affiliated with the Milwaukee Institute for Drug Discovery and represent discoveries with substantial potential for future commercial development. Among the many programs to support research and innovation at UWM, the UWM-Research Foundation manages intellectual property arising from university laboratories as an asset to strengthen the research mission.

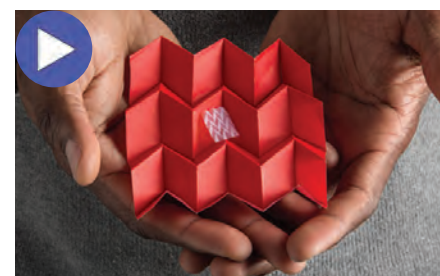
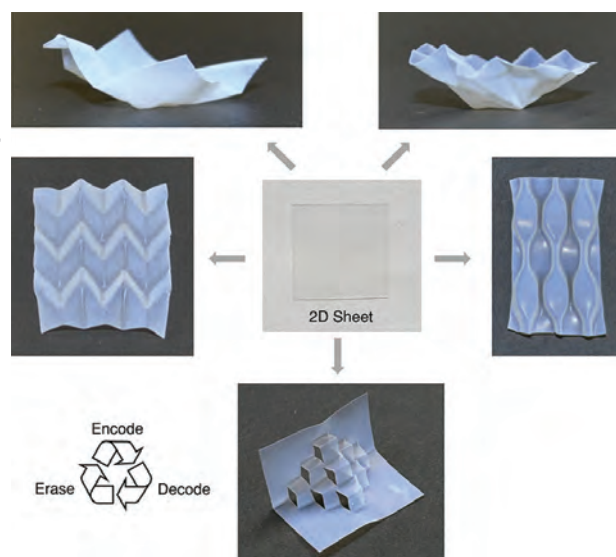
Dr. David Petering receiving an inventor award from the Chancellor and Provost.

When Origami Meets Chemistry

Plastic with a thousand faces: A single piece of Nafion foil makes it possible to produce a broad palette of complex 3D structures. In the journal *Angewandte Chemie*, Adebola Oyefusi and his research advisor Dr. Jian Chen describe how they use simple chemical “programming” to induce the foil to fold itself using origami and kirigami principles. These folds can be repeatedly “erased” and the foil can be “reprogrammed.”

Building upon the unique chemical reprogramming capability of the Nafion sheet, they have developed a reconfigurable molding technology that can significantly reduce the time, cost, and waste in 3D shaping of various materials, including polymers, ceramics, and metals.

To see the foil come to life, visit <https://bit.ly/ChemOrigamiVideo> or click on the button to the right. To learn more about the research visit <https://bit.ly/ChemOrigami>.



Chemical Bonds in the Community

UWM and Milwaukee Public Schools (MPS) Combine Efforts to Prepare Students for STEM Careers

The Partnership for Academic Literacies in Science* (PALS) is a collaboration between UWM and MPS, led by UWM's Chemistry & Biochemistry and English faculty members.

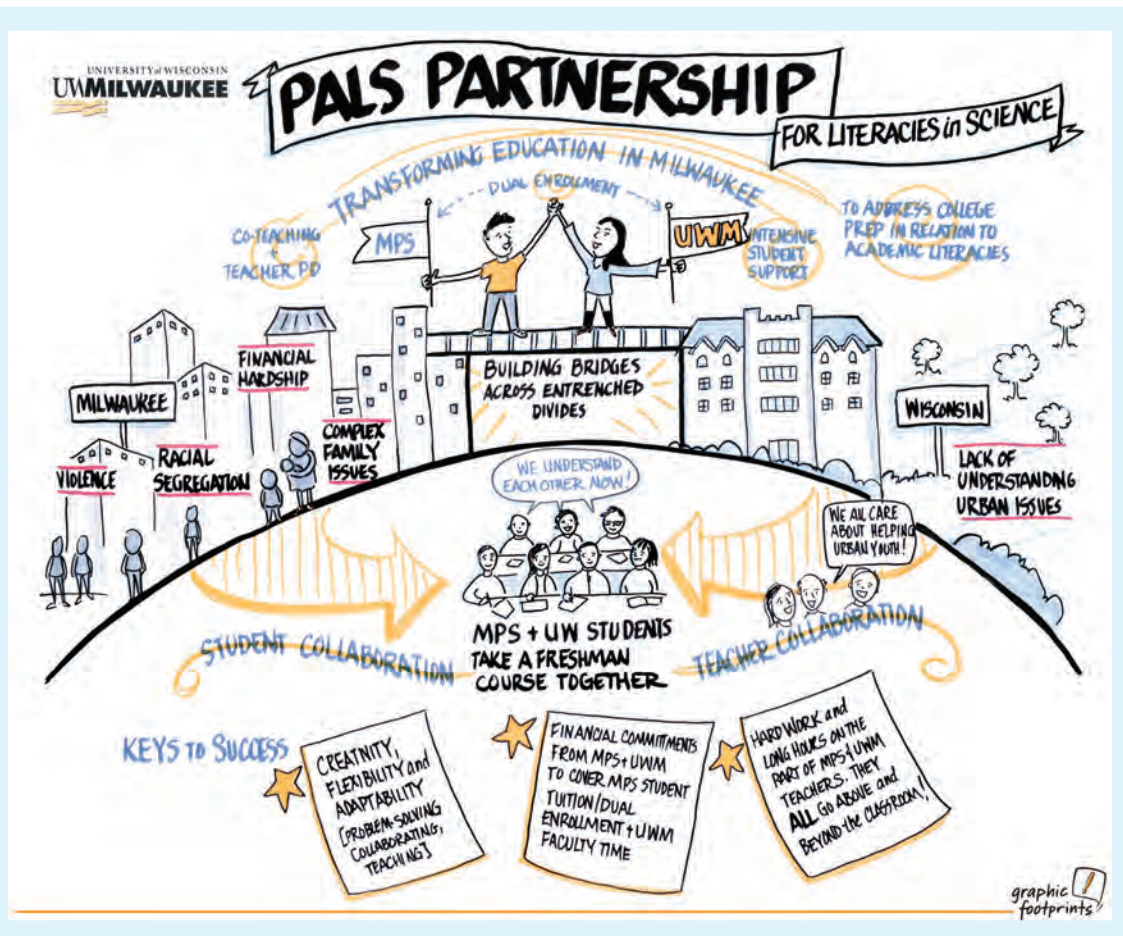
The collaboration evolved out of the much larger initiative, M3 (M cubed), which also includes the Milwaukee Area Technical College (MATC). M3 seeks to leverage the resources and talents of these three institutions to increase the academic and career success of their combined 140,000 students.

The PALS program offered a 3-credit Freshmen Seminar course at UWM in Fall 2017. This course titled "The Stories Science Tells," focused on increasing scientific literacy in students. This innovative, cross-curricular, dual-enrollment course was designed and co-taught by Dr. Anja Blecking (Chemistry & Biochemistry) and Dr. Vicki Bott (English). The students who enrolled in this course were MPS seniors and UWM freshmen. Over the 15-week semester, students of both institutions worked collaboratively, often in small groups, examining science texts

from various genres and topics, evaluating sources, and developing evidence-based writing skills. These activities were enhanced by hands-on science activities and research presentations. Student performance measures were designed to prepare students for STEM careers; students completed written essays, designed scientific posters, and gave oral presentations.

As an additional feature of the course, twelve MPS English and Science teachers were invited to co-teach the course on a 5-week rotating schedule. Embedding this professional development aspect into the program has already led to a variety of inter-disciplinary learning and teaching collaborations among MPS English and Science teachers.

The program is expected to continue through 2018; course preparation and MPS student recruitment has already started.



*Project has been funded by the Association of Public and Land-Grant Universities (APLU).

Length of Service Awards

2017



10
Years

Anja Blecking



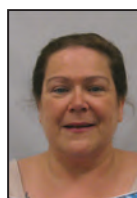
Mark Dietz

2018



5
Years

Kevin Blackburn



10
Years

Shelly Hagen-Harrington



Kristen Murphy



15
Years

Guilherme Indig

2018



20
Years

Joe Aldstadt



F. Holger Foersterling



25
Years

Wendy Grober



Kristene Surerus



30
Years

M. Mahmud Hossain



45
Years

James Cook

The 2018 recipients were celebrated on April 25, 2018 at the annual ceremony.

Congratulations and thank you for your dedication and commitment!

Inaugural 3MT

On April 4, 2018, Anahit Campbell (Mirza Group) and Daniel Knutson (Cook Group), graduate students of the Biochemistry & Chemistry Department, participated in UWM's first Three Minute Thesis (3MT) competition, organized by the Office of Research. They were part of a group of 14 finalists who made it to the last round of the 3MT. Students summarized their thesis in terms that the public could understand. This type of accessible and effective communication is necessary when scholars appeal for public research funding, conduct job interviews, and share the wonder of creating knowledge.

Anahit presented "Kidney Blockage Detection Made Quick, Simple, and Cost-effective" and Daniel presented "Design and Synthesis of Compounds Selective for Brain Receptors Associated with Depression, Migraine, and Schizophrenia." Anahit earned 3rd place and a prize of \$500. *Way to go!*

Ralf Vanselow and Gregory Fueger Passing

Professor Emeritus **Ralf Vanselow** passed away on March 17, 2017.

Ralf started working in the Department of Chemistry in 1968 and retired in 1996. He served two separate terms as Chair of the Department over several years. He was a founding member of the Laboratory for Surface Studies and also served as its Director. Ralf was committed to the growth of the Department of Chemistry & Biochemistry and dedicated to enhancing research excellence both in the Department and as well as the University. Ralf's leadership, erudition, and passion for science were an inspiration to all.



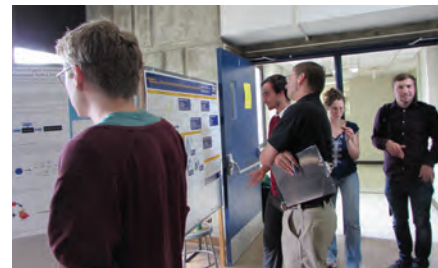
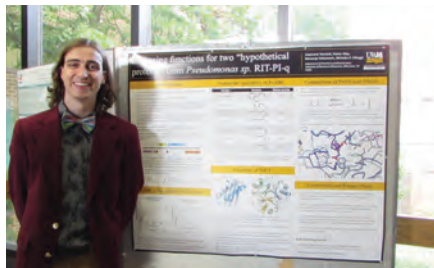
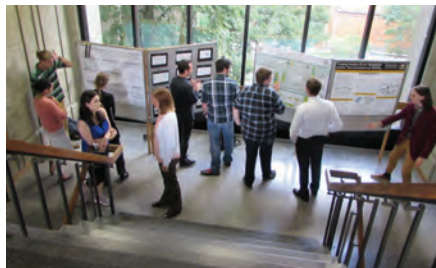
Former Department Manager **Gregory Fueger** passed away on March 26, 2018.

Greg served as Professor of Military Science at UWM from 1986-1989. He retired from active duty as a Lieutenant Colonel in the United States Army in 1989 and began working as the Department Manager in the Department of Chemistry and Biochemistry. Greg was very dedicated to ensuring that the Chemistry Department and the Chemistry Building ran smoothly. He also served on numerous University committees where his sense of fairness and thoroughness was appreciated. Greg retired from UWM in the fall of 2002.



2017 Support for Undergraduate Research Fellows (SURF) Awards

Thirteen undergraduate students participated in the 2017 Summer SURF program. They worked in eight different research laboratories in the Department of Chemistry and Biochemistry. Over a period of three months, they got an excellent inside look at the ongoing scientific research and expectations of UWM graduate students. At the end of the program, all students presented their work in the form of a poster and summarized their work in a written report. Many of the results will be part of future publications. The best poster was presented by William May and Anamarie Tomaich, both worked in Dr. Silvaggi's group under the mentorship of Nemanja Vuksanovic. The poster was titled "Assigning functions for two 'hypothetical proteins from *Pseudomonas* sp. RIT-PI-q." We are looking forward to another great summer of undergraduate research.



Friends of Chemistry

Your contributions enhance the educational experience of our students and strengthen the research and development of our faculty and staff. Please join us in thanking our friends. (Gifts were received from January 2017 to March 2018).

General Chemistry Fund

- Dr. Daniel Brophey
- Mrs. Melanie Chmielewski
- Dr. Steven A. Chmielewski
- Dr. Michael J. DiPierro
- Mr. Jed M. Dolnick
- Dow Chemical Company Foundation (matching gift for Shirley McLean)
- Eli Lilly and Company Foundation (matching gift for Steven and Melanie Chmielewski)
- Eurofins SF Analytical Laboratories
- Green Growers Technology Alliance
- Dr. William F. Gutknecht
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- Mr. John D. Stodola
- Dr. Anton S. Wallner

Chemistry Scholarship Fund

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- Dr. Steven Mark Socol

- Mrs. Johanna Vanselow
- Mr. Carl E. Wolff

Durward C. Layde Memorial Scholarship Fund

- Ms. Margaret M. Layde

George Keulks Memorial Chemistry Fellowship Fund

- Honeywell International Charity Matching (matching gift for Suheil Abdo)
- Dr. David Krenzke
- Mr. James W. Espy
- Mr. Lixun Zhang

For more information on becoming a Friend of Chemistry and Biochemistry, please see the pledge form on the back, visit our website www.uwm.edu/chemistry/give, or contact Christina McCaffery at 414-229-4963 or email her at cmmakal@uwm.edu.



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Department of Chemistry and Biochemistry

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