A Message from Our Program Director:

In my second year as program director we implemented quite a few changes to the MMG program curriculum. The old curriculum gave our students an excellent education, but there is always room for improvement. Besides, our graduate school (GSBS) started a new required core course for all first year Ph.D. students, which created some redundancy with our old curriculum. I am really happy with how the new curriculum has worked in the first year. To summarize, MMG students now take the GSBS Core course in the fall of year one. This is followed by a “Microbial Genetics and Physiology” course in the spring term of year one and a “Topics in Microbiology and Molecular Genetics” course in the fall of year two.

The new curriculum brings several improvements. In the new curriculum, students are done with their course work one semester earlier. We hope the change means they will graduate earlier, but that obviously remains to be confirmed. Another important difference is that the new GSBS and MMG courses introduce primary literature and real scientific thinking earlier in the curriculum. We have reduced the number of lectures, and increased the number of active learning sessions. One immediately obvious effect was that students were much more actively engaged in their learning, and appeared to enjoy their courses better. From a teacher’s perspective this made teaching even more rewarding as well. We are hopeful that the new curriculum will lead to increased retention of knowledge, so that students will remember the material when they are taking their qualifying exam or performing their thesis research. I want to thank the entire MMG faculty for their thoughtful input into the development of this new curriculum, and for teaching these new courses. It takes excellent teachers to turn a well-designed curriculum into an effective course.

Speaking of excellent teachers: In 2012, the University of Texas started recognizing its best teachers with the Regents’ Outstanding Teaching Awards. This award goes to the very best teachers at all the UT campuses across the state of Texas. One of these select teachers is Dr. Mike Lorenz. He is one of only four GSBS members recognized this year. Remarkably this is the third year in a row that one of the MMG program faculty has been recognized, with Dr. Steve Norris and Dr. Kevin Morano being recognized in the past two years. Our students have been similarly successful winning various awards. One of the most prestigious ones is the NIH NRSA fellowship, and ten different GSBS students have won one of these since 2012. Five of the ten are MMG students or are now recent alumni: Jessica Galloway-Peña, Melissa Robinson, Jennifer Herricks, Malik Raynor and Veronica Garcia. Congratulations to all of these great teachers/mentors and students/mentees. You have set the bar high, and in the next year we will try to live up to the highest expectations.

Ambro van Hoof, Ph.D.
MMG Associate Professor & Program Director
A Spotlight on Transforming Education from our Department Chair

Pick up any periodical - from USA Today to the Chronicles of Higher Education and the Harvard Educational Review - and you will read news and commentary regarding the best ways to impart knowledge to students. Educators (at least the good ones) are always seeking ways to improve teaching methods. Last year, after a great deal of discernment, the faculty of the Graduate School of Biomedical Sciences implemented a sweeping change in the curriculum for entering students. The move to a fall core course for all incoming students had a domino effect on program-specific curricula, including MMG program courses, which have also undergone major changes in content, approach, and timing. So far, faculty and students seem generally pleased with the new approaches to early training. Time will tell if these changes have a positive effect on our mission to teach the mindset, skills, habits, and knowledge needed for success in science-related careers.

We faculty know that change is the ultimate pot-stirrer. Reactions to change can range from mild interest to exhilaration, and from uneasiness to high anxiety. We thank you students for your open nature, your inquisitiveness, and ultimately for embracing this transformation. Scientists by definition are questioners, and productive questioners consider multiple answers. As you grow in your scientific pursuits, keep the spirit of inquiry and openness in all that you do. When you reach a point when you can be an enabler of change, adopt opportunities for transformation only when the change is driven by a desire to enhance outcomes. But also know that there will be times when you cannot control change. After all, as Robert C. Gallagher said, “Change is inevitable - except from a vending machine.”

Theresa M. Koehler, Ph.D.
MMG Professor & Department Chair

Want to learn more about MMG?
Visit us at: https://med.uth.edu/mmg/

Follow us on Facebook!
Search Microbiology & Molecular Genetics Graduate Program, UT-Med Sch-Houston on Facebook and “Like” us today to stay connected with news, events, awards, and activities happening in our department.

MMG Science Journalism

Past MMG postdoc Dan Haeusser is an Associate Blogger for the ASM Microbe Blog “Small Things Considered.” Keep an eye on this blog via http://schaechter.asmblog.org/schaechter/ to read Dan’s perspective on the microbial world. This summer, Dan finished his postdoc in the Margolin lab and will soon be starting his position as an Assistant Professor of Biology at Canisius College in Buffalo, NY. Congratulations Dan!
Award Winning MMG Students

The achievements of MMG students are frequently recognized by the Graduate School (https://gsbs.uth.edu/current-students/awards-and-funding-opportunities/) and external funding sources. Congratulations to the 2014-2015 award recipients!

Naomi Bier: Molecular Basis of Infectious Disease Training Grant position

Heather Danhof: ASM Science Teaching Fellowship
2nd place, Graduate Student Poster Competition, MBID Retreat
Molecular Basis of Infectious Disease Training Grant position

Amy Ford: 1st place, Samuel Kaplan Award for Best Poster in Eukaryotic Microbiology, ASM TX Branch Meeting

Veronica Garcia: ASM Robert D. Watkins Graduate Research Fellowship
Harry S. & Isabel C. Cameron Foundation Fellowship
Gigli Family Endowed Scholarship
1st place, O.B. Williams Award for Best Talk in General Microbiology, ASM TX Branch Meeting
Outstanding Poster Award, ASM General Meeting
Ruth L. Kirschtein National Research Award

Jae Han: 2nd place, John P. McGovern Presentation Skills Award
3rd place, Poster Competition, KSEA West Gulf Coast Regional Conference
3rd place, Poster Competition, UT Medical School Research Retreat

Yi Liu: GSBS Ralph H. & Ruth McCullough Foundation Award

Katie McCallum: 2nd place, Graduate Student Education Committee Poster Competition
3rd place, Samuel Kaplan Award for Best Poster in Eukaryotic Microbiology, ASM TX Branch Meeting

Camila Montealegre: George M. Stancel Fellowship
1st place, S.E. Sulkin Award for Best Talk in Medical Microbiology, ASM TX Branch Meeting

Malik Raynor: 1st place, Graduate Student Poster Competition, MBID Retreat
1st place, Poster Competition, UT Medical School Research Retreat

Melissa Robinson: Presidents’ Research Scholarship
2nd place, S.E. Sulkin Award for Best Talk in Medical Microbiology, ASM TX Branch Meeting
Thomas F. Burks Scholarship for Academic Merit

Veronica Rowlett: Eugene and Millicent Goldschmidt Graduate Student Award
3rd place, Graduate Student Education Committee Poster Competition
Investing in Student Futures Endowed Fellowship

Dean’s Research Award
This is the highest award given by the Medical School to graduate students. This year Veronica Rowlett (left), Camila Montealegre (right), and Melissa Robinson (not pictured) received this prestigious award. This is a fantastic achievement for these three MMGers and a remarkable testament to the quality of the students in our department!
MMGers Attend Prestigious Conferences & Workshops

MMG students and postdocs have frequent opportunities to experience both national and international events. Jae Han, Jill Losh, and Alex Marshall recently traveled north to attend and present posters at the 20th Annual Meeting of the RNA Society held at the University of Wisconsin-Madison. Malik Raynor also traveled to the University of Wisconsin-Madison, where he attended the Molecular Genetics of Bacteria & Phages Meeting and was a poster competition finalist. Giving an oral and poster presentation, respectively, Veronica Garcia and Amy Ford attended the 20th Annual Midwest Stress Response and Molecular Chaperone Meeting at Northwestern University, as did Sara Peffer. Additionally, Veronica Garcia attended the 115th General Meeting for the ASM in New Orleans and gave an oral presentation at the Gordon Research Conference on Stress Proteins in Growth, Development, & Disease in Lucca, Italy. Veronica Rowlett presented a poster describing her work at the ASM Conference of Prokaryotic Cell Biology and Development in Washington D.C. Camila Montealegre also traveled to D.C. to attend the Interscience Conference on Antimicrobial Agents and Chemotherapy. Members of the Lorenz lab attended the South Central Medical Mycology Meeting. Todd Cameron took part in the Gulf Coast Consortia workshop for Postdoctoral Mentoring. Many MMGers participated in the UT Medical School Research Retreat in October 2014, the American Society of Microbiology TX Branch Meeting in November 2014, and the UT Molecular Basis of Infectious Disease Research Retreat in March 2015.

MMGers Volunteer

In MMG, our students make it a priority to volunteer their time to advance STEM fields and enrich the community that we call home. This year, Carrie Graham organized the GSBS student community to participate in the March of Dimes for Babies walk and served as the team leader. Veronica Rowlett was a volunteer judge for the Houston Science and Engineering Fair. Jill Losh began an internship at Project C.U.R.E., a foundation that sends donated medical supplies and equipment to clinics in developing countries. In January, the GSBS Outreach Council hosted Community Science Night. Chris Evans, Alex Marshall, Belkys Sánchez, Sara Siegel, and Emily Stinemetz introduced many kids to the exciting world of microbiology with a “draw your own microbe” and handwashing station. Thanks to all of these MMGers for their time and devotion to volunteer work!
Student & Postdoc Leaders

*MMG students and postdocs obtain leadership roles in a number of committees and organizations throughout GSBS, the UTHealth System, and the Texas Medical Center.*

**Todd Cameron:** Travel Grant Reviewer, UTHealth Postdoctoral Association

**Heather Danhof:** President, GSBS First-Generation Student Group
Student Representative, GSBS Graduate Curriculum Committee

**Veronica Garcia:** Treasurer, Association of Minority Biomedical Researchers (“AMBR”)
Student Representative, MMG Steering Committee

**Carrie Graham:** Secretary, Association of Minority Biomedical Researchers (“AMBR”)

**Alex Marshall:** Coordinator, Fungi/Fungal (“Yeast Club”)

**Pedro Miramón:** Chair & Travel Grant Reviewer, UTHealth Postdoctoral Association
Teaching Assistant, Molecular Mycology course, Marine Biology Laboratories, Woods Hole, MA

**Veronica Rowlett:** Coordinator, Graduate Student Seminar Series (“GraSS”)

**Elisa Vesely:** MMG Student Representative, Graduate Student Education Committee
Student Representative, MMG Recruitment Committee

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### MMG Student Alumni Corner

Congratulations to **Melissa Robinson**, who recently graduated from the MMG program! Melissa will be moving to Abilene, TX this fall as her husband begins a position as a visiting professor. In the spring, she will start a postdoctoral position at Harvard University under Dr. Tom Bernhardt and Dr. David Rudner. This year, several of our most recent alumni started new positions. **Kim Busiek** is now Product Manager at Baylor Miraca Genetics Laboratories supporting the launches of new products, especially those that target genetic disorders. This past fall, **Bobbie Tsanova** returned to Bulgaria and began a position as a Drug Safety Specialist for the clinical research organization Pharmaceutical Product Development. Also in the fall, **Claudia Jiménez-López** was hired as a Next Generation Sequencing Specialist at Family Tree DNA, a genetic testing company. **Jennifer Abrams**, a postdoc in Dr. Jason Gestwicki’s lab at UCSF Mission Bay, recently received the UNCF-Merck Postdoctoral Science Research Fellowship. This prestigious two-year award will also give her the opportunities to present at the organization’s research symposium and participate in their mentorship program. This is just a small sample of the many successful students who have been a part of the MMG Department. We are very proud of our alumni!
Faculty Awards & Distinctions

In addition to the grants awarded and renewed for many faculty members this year, several have received additional distinctions. Congratulations to all recipients!

Heidi Kaplan, Ph.D.: Chair, ASM Distinguished Lectureship Committee
Member, ASM Membership Committee

Michael Lorenz, Ph.D.: University of Texas Regents’ Outstanding Teacher Award
Chair, GSBS Academic Standards Committee

Chris Mackenzie, Ph.D.: John Freeman Award for Outstanding Teacher in the Basic Sciences

William Margolin, Ph.D.: Dean’s Teaching Excellence Award, UT Medical School

Kevin Morano, Ph.D.: Associate Dean for Faculty Affairs, UTHSC-Houston
Chair, Cell and Molecular Biology Review Panel, OCAST
Inductee, UT Kenneth I. Shine, M.D., Academy of Health Science Education
Minnie Stevens Piper Distinguished Professor

Steve Norris, Ph.D.: Inductee, UT Kenneth I. Shine, M.D., Academy of Health Science Education

John Spudich, Ph.D.: President, International Union of Photobiology

Goodbyes & Hellos in MMG

This summer we said goodbye to our Administrative Manager, Karen Oandasan. For the past three years MMG was lucky to have such a wonderful member of our staff! We will be sad to see her go, but congratulate her as she begins her new position as Senior Administrative Manager in the Department of Psychiatry and Behavioral Sciences.

The MMG program recently welcomed Cesar Arias, M.D., Ph.D. as a faculty member. Cesar is also an associate professor in the Division of Infectious Diseases within the medical school’s Department of Internal Medicine. His research focuses on the clinical and molecular aspects of antimicrobial resistance, with an emphasis on Gram-positive bacteria.

MMG would like to welcome our three new graduate students! From left: Kara Schoenemann (Margolin lab) Belkys Sánchez (Ton-That lab) Minseon Kim (van Hoof lab)
Selected Student Publications

This year, several MMG students published first-author papers and book chapters. We have provided a list highlighting the impact of the recent work done by selected students.

**Jill Losh** (van Hoof lab)

Jill was co-first author with Ale Klauer, a previous MMG graduate student, on “Interaction between the RNA-dependent ATPase and poly(A) polymerase subunits of the TRAMP complex is mediated by short peptides and important for snoRNA processing”, published in *Nucleic Acids Research*. The eukaryotic RNA exosome plays a vital role in both processing and degrading substrates, which must be brought to it by multiple cofactors, such as the TRAMP complex. They identified the interaction site between two of the three subunits of TRAMP and found that disrupting this interface results in inefficient snoRNA processing by the RNA exosome. This finding helps elucidate the currently unknown structure of TRAMP, as well as the functional consequences that disrupting its subunit assembly has upon RNA exosome activity.

**Camila Montealegre** (Murray lab)

Camila published “The *Enterococcus faecalis* EbpA Pilus Protein: Attenuation of Expression, Biofilm Formation, and Adherence to Fibrinogen Start with the Rare Initiation Codon ATT” in *mBio*. The endocarditis and biofilm-associated pili (Ebp) are important in *Enterococcus faecalis* pathogenesis. In this paper, Camila demonstrated that ATT is the initiation codon of EbpA (the tip subunit of the pili), and relative to a constructed ATG start codon, results in smaller amounts of EbpA on the surface of the cells, attenuating biofilm formation and fibrinogen adherence, phenotypes associated with the ability of *E. faecalis* to cause infections. Additionally this year, Camila was second author on “*Enterococcus faecium* PBP5-S/R, the missing link between PBP5-S and PBP5-R”, published in *Antimicrobial Agents and Chemotherapy*.

**Sara Peffer** (Morano lab)

Sara was co-first author with Kim Cope, a previous lab member, on a book chapter titled “Unraveling protein misfolding diseases using model systems” in *Future Science: Protein Misfolding Diseases and Targets*, currently in press. They had the opportunity to write a special report educating medical doctors on the model systems used in studying protein misfolding diseases. The report covered general advantages and disadvantages for each system such as *S. cerevisiae*, a single celled organism optimal for molecular studies, and multicellular eukaryotes such as *C. elegans* and *M. musculus*, best suited for tissue and whole organism studies. They also included recent findings, with impact for the pharmaceutical and medical communities, based on research using these model systems.

**Veronica Rowlett** (Margolin lab)

Veronica was first author of three papers: “3D-SIM super-resolution of FtsZ and its membrane tethers in *Escherichia coli* cells” in *Biophysical Journal*, “Localization of proteins within intact bacterial cells using fluorescent protein fusions” in *Springer Protocols Handbooks*, and “The Min system and other nucleoid-independent regulators of Z ring positioning” in *Frontiers in Microbiology*. This year, her work has been focused on high resolution imaging of bacterial proteins to view the structures they form in *vivo* and in *vitro*. Understanding how proteins are organized provides greater understanding of their function during bacterial cell division. Veronica was also second author on “A mutation in *Escherichia coli* ftsZ bypasses the requirement for the essential division gene zipA and confers resistance to FtsZ assembly inhibitors by stabilizing protofilament bundling”, published in *Molecular Microbiology*. 
Transforming Your Education

Both GSBS and MMG implemented a new curriculum this year for incoming students. To gain some first-hand opinions of these changes, we interviewed three MMGers: a faculty member, a fifth-year student and recent TA, and a first-year student who has now completed these courses.

Nick DeLay, Ph.D.: MMG Assistant Professor

How has teaching classes for the new GSBS Core and MMG courses compared to your previous years teaching? For me, the goal has been to change my lectures in MMG so that they are complementary and reinforcing, but not redundant with the lessons in the Core course.

What is the best aspect of the new curriculum? Having a core course that all students participate in regardless of program gives students the opportunity to develop or solidify fundamental knowledge that covers a very broad area of biology, which will help them to develop into more well-rounded scientists. While this may sound trite, I think that students will appreciate this year’s course information when they need to draw upon this knowledge for unanticipated reasons.

What is the best way for incoming students to prepare? Probably one of the most challenging aspects for students is maintaining focus for the entire morning of lectures for the Core course; particularly, when there are so many electronic distractions. It is useful to learn to step away from your cell phone and computer and to be able to live without the need to get constant electronic feedback.

Katie McCallum: Fifth-year MMG student & recent TA for GSBS Core course

How did your experience with the new GSBS Core course compare with your own first semester? The new Core course is dramatically different from the curriculum I was exposed to in 2010. I think the most significant changes are the flexibility it provides students regarding choosing a program, the increase in the diversity of the topics students are expected to understand, and the emphasis placed on collaborative critical thinking.

What is the best aspect of the new curriculum? The shift in focus away from didactic lectures and graded exams toward collaborative critical thinking and analysis.

What is the best way for incoming students to prepare? The most important thing you can do as an incoming first-year graduate student is to remember to keep an open mind. Biomedical research as a whole is becoming increasingly collaborative, and I believe students will be expected to have a much wider breadth of knowledge in the future. While a course such as this can often feel like an information overload, every piece of knowledge you take away will likely become valuable at some point in your scientific career.

Minseon Kim: First-year MMG student

How did the new curriculum influence your transition into graduate school? The GSBS Core course in the first semester covered broad areas of biology. I learned many new things of course, especially things that were not my top interests or related to my major. At the same time, I had a chance to review topics that I have learned before. It was a great opportunity to prep me before moving into MMG and starting my research.

Do you feel that these courses have adequately prepared you as you continue your education? Absolutely. Both the Core and MMG courses were composed of didactic and discussion classes. Discussion classes especially helped me to practice developing scientific ideas and most importantly, explaining those ideas to others (through presentations and/or writing). I am sure that developing scientific ideas and explaining them to others is very important and I will do these all the time for the rest of my graduate education.

What is the best aspect of the new curriculum? Other than things that I mentioned above, I believe ‘successfully co-working’ is one of the important attributes that I want and need to develop during my graduate training. In that sense, it was great to spend a whole semester with other 1st year students and work together to accomplish weekly projects.

What is the best way for incoming students to prepare? Whenever you have a chance to speak about your ideas or to ask a question in class or seminars, do it as many times as you can. It might be uncomfortable, and it was hard for me and still is. However, I find that whenever I ask a question I learn more than the answer; things that I missed or did not even wonder about.
Annual MMG Retreat

Thanks to the hard work of faculty member Lanny Ling and administrator Vicci Sanders, this year’s MMG retreat was a huge success! Held at Camp Allen in Navasota, TX, the two-day retreat was packed with 26 excellent student and postdoc presentations. Additionally, MMGers got to spend some free time enjoying archery, kayaking, skeet shooting, and trail riding. This year, awards were given for the best pre-candidacy, post-candidacy, and postdoc presentation. An additional award was given to the student who asked the best questions. Our keynote speaker this year, Tina Henkin from The Ohio State University, gave an outstanding seminar on riboswitches and their role in gene regulation. The first-year students organized science-themed Pictionary and displayed a hilarious collection of microbiology-inspired tweets written by the entire department. The second-year students provided snacks and beverages throughout the night around the campfire. This year’s retreat t-shirt featured an epic Viking scientist and the phrase “Feel the Power…MMG Retreat 2015”! The design was submitted by the Morano lab.

Thanks to all who contributed to this event!
Life in the MMG Department

"Old" & "new" MMGers at the first Friday Afternoon Club (FAC) of the 2014-2015 academic year.

The MMG Halloween theme this year was LEGOs! For the 3rd year in a row, the MMG Department won 1st place at both the Medical School Halloween Contest & the UTHealth Halloween Contest!

MMG celebrated the holiday season with a delicious lunch, ugly holiday sweaters, & race to dress-up a lucky few as Santa Claus.

Our Halloween costumes were so impressive that we received the Limited Edition Research Institute playset from LEGO®!

MMGers enjoy a Saturday brunch.

Want your photos to be included in the next MMG newsletter? Email them at anytime to Jill Losh (Jillian.S.Losh@uth.tmc.edu)

Preparing for hurricane season... Having fun in the new Morano lab!
**MMG Faculty & Student Roster**

**MMG Program Faculty**

**Cesar Arias, M.D., Ph.D.**  
Molecular mechanisms of antibiotic resistance in Gram-positive pathogens

**Peter Christie, Ph.D.**  
Macromolecular transport during pathogenesis  
Jay Gordon

**Nick DeLay, Ph.D.**  
Regulation of bacterial gene expression by small RNAs

**William Dowhan, Ph.D.**  
Cell membrane structure, function, & assembly

**Danielle Garsin, Ph.D.**  
Understanding the genetics of bacterial infection using C. elegans  
Carrie Graham  
Yi Liu  
Katie McCallum

**Barrett Harvey, Ph.D.**  
Design and development of recombinant antibodies & biologics  
Emily Stinemetz

**Magnus Höök, Ph.D.**  
Biology of extracellular matrix, adhesion, & microbial virulence

**Heidi Kaplan, Ph.D.**  
Cell-cell interactions required for multicellular development & biofilms

**Nayun Kim, Ph.D.**  
Factors involved in instability within eukaryotic genomes  
Norah Owiti

**Theresa Koehler, Ph.D.**  
Department Chair  
Molecular basis of B. anthracis pathogenicity  
Naomi Bier  
Malik Raynor

**Ziyin Li, Ph.D.**  
Cell cycle control & ubiquitin pathways in T. brucei

**Jiqiang “Lanny” Ling, Ph.D.**  
Connections between protein synthesis & microbial stress responses  
Chris Evans

**Jun Liu, Ph.D.**  
3-D structure & function of nanomachines

**Michael Lorenz, Ph.D.**  
Molecular basis of fungal infections  
Heather Danhof  
Carrie Graham  
Elisa Vesely

**William Margolin, Ph.D.**  
Bacterial cell division  
Veronica Rowlett  
Kara Schoenemann

**Kevin Morano, Ph.D.**  
Protein chaperones & stress response  
Amy Ford  
Veronica Garcia  
Sara Peffer

**Barbara Murray, M.D.**  
Enterococcal virulence & antibiotic resistance in human infections  
Camila Montealegre

**Steven Norris, Ph.D.**  
Molecular genetics of pathogenic bacteria

**Samuel Shelburne M.D., Ph.D.**  
Streptococcus virulence

**John Spudich, Ph.D.**  
Structure & function of photoactive membrane proteins & light-triggered signal transduction

**Hung Ton-That, Ph.D.**  
Pilus assembly of Gram-positive pathogens  
Melissa Robinson  
Belkys Sánchez  
Sara Siegel

**Ambro van Hoof, Ph.D.**  
Graduate Program Director  
RNA degradation in eukaryotes  
Jae Han  
Minseon Kim  
Jill Losh  
Alex Marshall  
Yi Xu, Ph.D.  
Bacterial pathogens & host interactions

**Research Faculty**

**Chris Mackenzie, Ph.D.**  
Slavena Vylkova, Ph.D.  
Chenggang Wu, Ph.D.

**MMG Staff**

Lyz Culpepper  
Yi Dong  
Linda Fields  
Vicci Sanders
MMG Training Room

This year the MMG Training Room got a complete makeover, including new furniture & a student-stocked library. Thank you to our faculty & staff for providing us with such a wonderful work space.

Life Outside of MMG

Emily Stinemetz got hitched this June! Congrats Emily & Brian!

MMG Newsletter Editors

Do you have questions, comments, or suggestions? Please contact us at the emails provided below.

Jill Losh
Jillian.S.Losh@uth.tmc.edu

Kara Schoenemann
Kara.Schoenemann@uth.tmc.edu

Elisa Vesely
Elisa.Vesely@uth.tmc.edu

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