SCIENTIA

A publication for College of Science and Health alumni







Notes from the dean | SCIENTIA



Q&A with Dean Koocher

Dean Gerry Koocher, PhD, joined the College of Science and Health (CSH) in July 2013. Prior to coming to DePaul, Koocher served as a professor of psychology, health sciences dean and associate provost at Simmons College in Boston. He previously served as chief psychologist at Boston Children's Hospital and Judge Baker Children's Center, and as executive director of the Linda Pollin Institute at Harvard Medical School. He remains affiliated as a senior associate in psychology at Boston Children's Hospital and lecturer in psychiatry at Harvard Medical School. Koocher holds a BA in psychology from Boston University and a PhD in clinical psychology from the University of Missouri-Columbia.

Currently editor of the journal Ethics & Behavior, Koocher previously served as editor of the Journal of Pediatric Psychology and The Clinical Psychologist. He has published more than 250 articles and book chapters, and authored or edited 15 books including "Ethics in Psychology and the Mental Health Professions," "Psychologists' Desk Reference" and "The Parents' Guide to Psychological First Aid." His research and clinical interests include family coping with chronic illness and bereavement; ethical and public policy issues in mental health services and research; quackery and malpractice; and psychological aspects of children and the law. With his first academic year at DePaul nearing completion, Koocher shared his thoughts on the college's strengths, priorities and plans for the future.

As a new dean, what has most impressed or surprised you about the college?

The dedication and student-centeredness I have encountered at DePaul stands out as particularly impressive. Faculty and staff members extend themselves to make certain that our students get the best possible educational experience. For example, in the past year, we have finished detailed work on six graduate programs that will allow advanced undergraduates to reduce a year of educational expenses. We also collaborated with the College of Education on an option for secondary education students to double-major in a CSH department. Furthermore, we have faculty members who use their own research funds to send students to meetings of scientific societies so they can present their student research. In planning meetings, I frequently hear people ask, "How will this benefit or help our students?" as part of the decision-making process. This attitude and dedication is all too rare at other institutions of higher education.

What do you foresee as the college's priorities in the coming years?

CSH will focus on capacity building and program refinement, with an emphasis on teaching quality and student engagement. In the next 12 months, we will add significant laboratory space in McGowan South and improve our physics labs in Byrne Hall. These projects will meet the needs of our students and help them to fit math and science courses into their schedules in a more timely fashion. We will be engaging students in research on a grander scale and will also adjust our strategic focus to include new pathways into advanced degree and professional programs with other colleges at DePaul, other universities in the area and some of Chicagoland's community colleges. These growth opportunities will continue to position DePaul as the premier careeroriented educational destination in the sciences and health professions.

What has been your favorite experience at DePaul so far?

My favorite experiences have all involved interacting with our student leaders, at both the college and university levels. Our students are energetic and engaged, and take a strong role in driving their education. They are not reticent to share ideas and press for ways to make the DePaul experience better. As an example, I recently enjoyed a casual dinner with one of the CSH student government leaders. He is the son of Haitian immigrants and is headed toward a medical degree with a profound sense of dedication and maturity. I have found DePaul students to be highly socially conscious and self-motivated, with a drive to make the world a better place.

Proud graduate discovers love of learning at DePaul

Patrick J. Jessee (CSH '05) enrolled at DePaul intending to knock out a few biology courses so he could apply to medical school. The Granite City, Ill., native already had a BA in chemistry from Southern Illinois University Edwardsville, and he was busy working full time as a paramedic for the Chicago Fire Department. But when Jessee discovered that he could obtain a second bachelor's degree by taking another five classes on top of the medical school prerequisites, he jumped at the opportunity. "DePaul really engaged me in regards to academics," Jessee asserts. "I had failures and problems at my first undergraduate institution, but DePaul was willing to take a chance on me."

From the start, Jessee connected with DePaul professors, citing Margaret Silliker, Anthony Ippolito and James Masken as valuable mentors. "The way they worked with me really helped me to turn my grades around," Jessee remembers. Meanwhile, the discipline and focus required during his 24-hour ambulance shifts carried over into the classroom. "I applied that same attention to detail that I used on the ambulance to taking a test or getting assignments done early," he says.

Jessee didn't allow his challenging work schedule to compromise his academic experiences. Recalling a favorite course, Jessee notes that he didn't hold back in class discussions. "I was the only male and the only Caucasian in Latina Cultures in America," he says. "It was very enriching. We were able to tear down those walls and have an honest, open conversation about similarities and differences in our cultures." The insights from that class continue to make an impact on him many years later. "It's made me more aware and

a better communicator when I'm working in different communities around the city," he says. Entering his 14th year with the Chicago Fire Department, Jessee now works as both a firefighter and a paramedic, and puts his background in the physical and biological sciences to work on the hazardous materials team within the special operations unit. Jessee never knows precisely what he'll encounter when he reports to work. Gunshot wounds, cardiac arrest, drug overdoses, structural fires and ruptured gas lines are all routine, but he takes each challenge in stride.

In 2011, Jessee faced a different type of challenge when he was diagnosed with non-Hodgkin lymphoma. "Despite having a wealth of medical experience and education in the biological sciences, I didn't know a single thing about my disease," he says, but when he reached out to the Leukemia & Lymphoma Society (LLS), he found a network of support. Since overcoming cancer, Jessee has stayed involved with the organization by advocating for cancer patients through the state legislature, as well as through peer-topeer support. LLS recently nominated Jessee for its "Man of the Year" campaign, and as part of that designation, he is currently leading a fundraising initiative on the organization's behalf.

While Jessee was once academically disinclined, he now holds three master's degrees in addition to his dual bachelors, including degrees from the University of Chicago and Northwestern University. But he insists it all started at DePaul: "I want to emphasize that the DePaul community made an investment in me, and I flourished because of that," Jessee says. "Medical school is my next goal."







Patrick J. Jessee's top four tips for recent graduates:

Focus on your studies.

While the college experience is important, your primary job is academics. Your successes and failures while in school will stay with you the rest of your life.

Be self-motivated.

Learn from those you work with, but understand that you need to be the one to challenge yourself and push yourself forward in your career.

Be unconventional.

Think outside of the box in your life and your career. Different skill sets are needed throughout the workforce, and your strengths can make a huge impact on your employment.

Break down boundaries.

You never know your limits until you challenge them and break them down. You may discover that you can do what you once thought was impossible.



Intrepid biologist inspires lifelong lessons

Forty years ago, DePaul faculty member Mary Alice McWhinnie, PhD (CSH '44, MS '46) and her research assistant, Sister Mary Odile Cahoon, PhD (CSH '54, MS '58), became the first female scientists to spend the entire winter in Antarctica. The two women braved bitterly cold temperatures and months of isolation at McMurdo Station, a remote research station on the edge of the Ross Ice Shelf, to study Euphausia superba, commonly known as krill. McWhinnie was an expert on these tiny ocean-bound crustaceans, and she made nine trips to Antarctica to learn more about their physiological properties. In honor of the anniversary of McWhinnie's 1974 winter expedition, occurring six years before her death in 1980 at the age of 58, three former students share their stories and memories of collaborating with "Dr. M.A." and conducting research in Antarctica.

as one of McWhinnie's research assistants during the winter of 1974 and again for four months in 1975-76. Subsequently, he spent 34 years with the Wisconsin Department of Natural Resources.

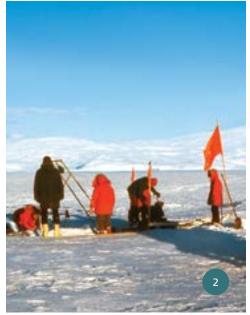
Short of being in outer space, there is no more adventurous or difficult place to work than Antarctica. The profound

darkness, utter cold and complete isolation almost defy description. Temperatures of –30° were not uncommon, –45° was a "cold" day and we rarely ventured forth when the wind chill dropped below –100°. Blizzards brought winds of 140 mph.

Our sampling sites were on the sea ice, often miles from McMurdo Station and reachable only by a tracked vehicle. We used a 42-inch-diameter auger to cut holes through ice that was more than 5 feet thick and then pulled a small wooden hut over the hole. The hut was our shelter, and the opening in its floor was our porthole to organisms that lived just under the ice or all the way down on the sea floor 500 meters below.

The huts were equipped with an oil heater and a gas-powered electric generator for light, but neither the huts nor their equipment were up to the Antarctic weather. We worked for hours in below-zero temperatures. Ice was a constant and slippery companion inside the huts, and when the generators failed, we worked by flashlight.

We chopped frozen seal carcasses to bait traps set on the sea floor and used nets to sample anything we could catch above the bottom. Krill, sea stars, sea urchins, sea spiders, octopuses and several species







of fish were among the marine life used in Dr. M.A.'s experiments. Despite equipment malfunctions, blizzards and the cold, more than 100 of the DePaul team's sampling trips were successful and provided a constant supply of live organisms for our experiments. As Dr. M.A. often said, "Mother Nature reveals her secrets with great reluctance."

MARGARET "MAGGIE" AMSLER

(CSH '79), a research associate at the University of Alabama at Birmingham, worked in McWhinnie's lab for two years and was part of the final research team that McWhinnie assembled. Due to health problems, McWhinnie was unable to accompany her team on this last visit, and she passed away while they were in Antarctica.

Antarctica is a place like no other. I love the remoteness and its endless scientific opportunities. That first season, I spent a lot of time at sea, watching the ship's echo sounder to detect densities of krill. Oftentimes, dense schools of krill would be in narrow passages or sheltered waters with phenomenal glaciers and mountains towering everywhere—breathtaking scenery. A lot of time was spent out on deck, too, getting wet hauling nets and buckets of krill around. Science is exhilarating in so many ways.

I owe Dr. M.A. my career. I really had no intention of becoming a polar marine biologist, but through my experience that first year, I got into a graduate program working on krill. To this day, *Euphausia superba* is my favorite animal and the

beast that I know best. When I'm at Palmer Station [the Antarctic research center where McWhinnie frequently worked], it's impossible not to think about Dr. M.A. every day—the laboratory facility is named after her. I come down the stairs, and a dedication plaque with her picture is right there.

I recently returned from my 23rd trip to Antarctica, the majority of which have been at Palmer Station. I've lost track, but I think I've surpassed six cumulative years down there. I've been involved in four different research projects in the Antarctic, ranging from the depths of the sea floor to the shallow coastal waters. I'm living a biologist's dream thanks to Dr. McWhinnie.

charlene denys (csh phd '81) served on McWhinnie's research teams for four summer seasons. She recently retired after 30 years with the U.S. Environmental Protection Agency.

Mary Alice was a meticulous scientist who expected excellence, integrity, hard work and commitment. Her love of science was obvious and infectious; her memory was absolutely prodigious, as were her energy and capacity for very long hours of work. She put the same energy into teaching and sharing information with nonscientists that she put into her research.

With Mary Alice's focus on metabolic cold adaptation, it wasn't always clear to others why she also spent her energies on seemingly unrelated natural history and biological questions tangentially related to krill. That question had a two-part answer.

First, Mary Alice was a biologist with very broad interests, and she was skilled at seizing opportunities to expand knowledge. Second, there was serious talk in the international community about possible commercial harvesting of krill as a protein source. On one trip to Palmer Station, we visited a factory in Chile that was developing a "krill stick" product similar to fish sticks for possible sale in the U.S. We also visited an enterprise in Louisiana that was perfecting a krill peeling machine, adapted from shrimp peeling machines.

The potential for commercial harvesting made it particularly important to understand the biology and reproduction of krill, which is at the base of almost the entire food chain in Antarctica. Uninformed harvesting had the potential to damage the Antarctic ecosystem, including populations of other invertebrates, seals, birds and whales, all of which depend on krill as a major food source. At her core, Mary Alice was a talented and committed biologist in the broadest sense—she marveled at the wonders of the living world and wanted to share that passion with her students, her coworkers and the public.

- Sister Mary Odile Cahoon and Mary Alice McWhinnie conduct survival training in an ice cave. Photo credit: William Lokey.
- 2 Cahoon, Polish scientist Dr. Stanislaw Rakusa-Suszczewski, McWhinnie and two others work on a krill sampling station. Photo credit: Dennis Schenborr
- 3 Dennis Schenborn tries to stay warm inside a heated fish hut. Photo credit: Dennis Schenborn.
- 4 Schenborn, Rakusa-Suszczewski and Greg Nichol, a civilian contract employee, negotiate the icy waters on their raft. Photo credit: Dennis Schenborn.

 All photos are from 1974.

Student organization spotlight: Psi Chi

From meeting graduate school requirements to choosing among internship opportunities and concentrations, psychology majors face plenty of deadlines and decisions. That's why DePaul's chapter of Psi Chi, the international psychology honor society, offers regular get-togethers for psychology students to share information and discuss a variety of issues related to their major. "Psi Chi is all about encouraging excellence and scholarship," says junior Virginia Cox, president-elect. "That's what we focus on—making sure that students who are devoted to psychology have the resources they need to succeed."

Psi Chi works closely with the college's Psychology Club, but the two organizations differ in their requirements. Members of Psi Chi must maintain a GPA of 3.5 or higher in psychology courses and an overall GPA of at least 3.24. Students are not eligible to join until they have completed 14 quarter hours in psychology. "The membership distinction allows bright and committed students to stand out and be recognized by peers, faculty and parents," notes Theresa Luhrs (CSH MA '95, PhD '99), director of undergraduate studies and one of the club's advisors. While the total number of members fluctuates each year, Psi Chi inducted nearly 70 students in 2013.

Throughout the year, Psi Chi brings psychology majors together to discuss current issues in the field, learn more

about career paths and participate in service projects. "All Hallows College in Dublin recently reached out to us through one of our advisors for help in starting their own Psi Chi chapter," shares senior Eleanor Herzberg, president. "We're going to tell them about what we do and answer their questions over Skype." Herzberg plans to focus on the importance of "getting the word out" about the organization, as well as selecting dedicated candidates for the executive board. In DePaul's club, the president-elect is named at the end of his or her sophomore year, and the subsequent year is an opportunity to learn and grow under the president. "They are then well prepared to take over as president at the beginning of their senior year," says Luhrs. "It provides a continuity and rhythm to the organization."

Cox, the current president-elect, transferred to DePaul as a sophomore, and she was immediately interested in the club. "Sometimes it's hard to make connections in your classes, especially on the quarter system, since it's so fast-paced," she states. "Through Psi Chi, I've been able to meet new people, network and learn more about different areas of psychology." To that end, the executive board has been planning more social activities to complement the academic-focused panels and informational sessions.



conduct research, was first exposed to the research side of psychology when she attended a Psi Chi meeting as a freshman. "Sometimes students think that research may not be for them, but when they learn of its applicability and potential to change lives, they become curious and want to learn more," she explains. During Torres' presidency, she strove to educate her peers on this topic,



Psi Chi | SCIENTIA

or Kimberly Quinn, along with current graduat

on the MS in general psychology program with members of Psi Chi.

bringing in speakers and inviting department labs to recruit students. "I like to think of Psi Chi as a community of student mentors," she explains. Indeed, Luhrs emphasizes this point in discussing her role as advisor. "All substantive decisions and day-to-day governance are done by the officers," she notes. "We are simply a sounding board." While Psi Chi provides extensive help and advice to its members, the club offers additional benefits to its executive officers. "I've become a better leader," says Herzberg. "I have to think on my feet and stay on top of things. While it's a big responsibility, it's been really great!"



In February, Psi Chi hosted one of its most popular annual gatherings, the graduate school panel. Current students and alumni spoke about the application process, the pros and cons of taking a year off, and the differences between undergraduate and graduate coursework. Stephanie Torres (CSH '13), a first-year doctoral student in clinical psychology at Loyola University Chicago and former Psi Chi president, returned to campus for the event. "By shaping me to be a team leader as well as a team contributor, Psi Chi definitely prepared me for graduate school," she says.

Torres, who hopes to become a clinical psychologist and conduct research was first expected to the research side.

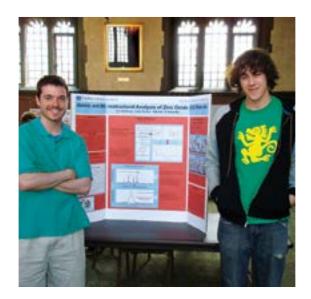
Smart phones and synthetic bone capture Associate Professor Gabriela González Avilés' interest

In our technology-driven age, touch screens and flat-panel displays are ubiquitous. Smart phones, tablets, high-resolution televisions and similar devices connect, inform, entertain and distract us on a daily basis. But how many of us understand how these shiny screens actually work? That's the central question driving much of Associate Professor Gabriela González Avilés' research.

González Avilés studies condensed matter physics, with a focus in solids. "I use X-ray and neutron diffraction to look at how atoms are arranged in materials, and how that arrangement affects the properties they have," she explains. To conduct her diffraction experiments, González Avilés relies on sophisticated instruments housed at the Advanced Photon Source at Argonne National Laboratory, as well as the Spallation Neutron Source at Oak Ridge National Laboratory.

Zinc oxide is González Avilés' material of choice; she has been exploring its electrical and structural properties since she first arrived at DePaul six years ago. She posits that zinc oxide may be able to replace some of the transparent semiconductors currently used in the screens of televisions, computers, tablets and more. "Right now, flatpanel displays use indium-tin oxide, which is quite expensive, toxic and scarce," she says. "Zinc, on the other hand, is nontoxic and widely available."

Although González Avilés is a member of the physics department, she's a material science engineer by training. "Material science is a very broad field, so you could be a chemist, you could be a biologist, you could be a physicist, and still be doing material science research," she notes. While much of her work relates most closely to physics, González Avilés also engages in various interdisciplinary projects.



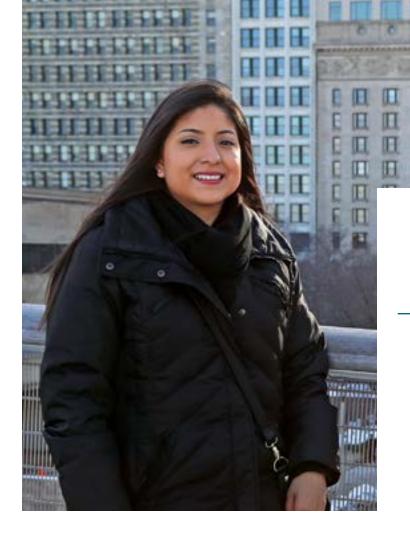




In collaboration with Northwestern University and Centro Brasileiro de Pesquisas Físicas in Rio de Janeiro. González Avilés has been working on the physics portion of a project that involves synthetic bone. "It has the same crystal structure and same atoms as the bones in our body," she explains. "It's used for implants—you need to coat the titanium or any other metal with something that looks like the bones in your body so it doesn't get rejected." Unsurprisingly, González Avilés has zeroed in on zinc oxide for this undertaking, asking, "If we used zinc, how would that affect the bone? How would it affect its atomic structure?" She has also studied the effects of heavy metals, such as cadmium and lead, on bone.

Over the years, DePaul students have assisted with González Avilés' research through independent studies or summer projects (photos at left). "They do small projects within the big project," she notes. "For example, they might work on optimizing some of the conditions for making the samples or measuring electrical properties." González Avilés particularly enjoys this aspect of her career. "I love to introduce motivated students to a project and then have them work in my research lab," she says.

Like her students, González Avilés possesses an unquenchable curiosity about the world. In addition to her ongoing studies with zinc oxide and synthetic bone, she is also planning to work with scientists from Argonne National Laboratory to investigate new materials for lithium rechargeable batteries. As with all her projects, there's no saying where this exploration will lead. "There are many questions to be answered," she asserts. "As we learn more, there are always new routes to take. That's what makes research fun!"



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"Thanks to this scholarship, I don't have to worry as much about finances."

When Ivette Enriquez was considering her college options as a high school student, her dad offered some good advice. "My dad got to where he is by working hard every day with little in the way of education," Enriquez recalls. "He pointed out that even though I would have to work hard, a college education can help me to achieve my dreams faster and can only open doors for me." Four years later, Enriquez's dedication has paid off as she prepares to graduate with a psychology and sociology double major. Next up, she plans to pursue a PhD.

Enriquez credits a substantial annual scholarship with helping her to stay on track. With this extra support, it has been easier for Enriquez to focus on classes, volunteer work and "all the different resources DePaul has to offer." She says that being awarded the scholarship was one of the best moments of her life. "Thanks to this scholarship, I don't have to worry as much about finances—and neither does my family," Enriquez asserts. "I've been able to experience so many great things." In particular, she cites small class sizes, fantastic professors and the Vincentian mission as some of her favorite aspects of DePaul.

Scholarship support and other forms of financial assistance enable two-thirds of DePaul students to experience these same types of opportunities. Each year, the generosity of alumni helps hard-working students to achieve their educational goals. With that in mind, alumni are encouraged to give back to their alma mater through All for DePaul, a special participation challenge that draws on one of the university's greatest resources—graduates—to make a difference in the lives of today's students.

With more than 80 percent of the 9,000 alumni donor goal achieved, the end is in sight, but alumni will need to come together for the final push before the conclusion of the challenge on June 30. Since participation is the goal, a gift of any size, given to any fund (see suggested funds at left), will bring the university one step closer to successful completion of the challenge—and one step closer to helping students like Enriquez reach their dreams.

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Lab notes | SCIENTIA

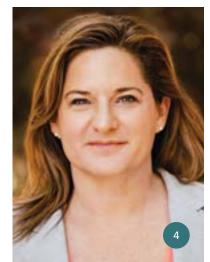








- 1 Last fall, CSH students from across the disciplines presented their research at the 11th Annual Natural Sciences, Mathematics & Technology Showcase. An impressive range of research questions, including "Do eyeball sizes in sharks correlate with their preferred habits?", "What role can regenerated endothelial cells play in diabetes?" and "Is social anxiety linked to exaggerated facial mimicry?", showcased the varied scientific interests and passions of CSH undergraduates.
- 2 In October, the U.S. Environmental Protection Agency (EPA) awarded a People, Prosperity and the Planet Phase I grant to six DePaul students. The \$15,000 grant builds on a recent summer program between DePaul and the Gary Comer Youth Center (see the fall 2013 issue of Scientia). The DePaul students have been teaching the Gary Comer students about soil quality and erosion, as well as running soil tests in the Greater Grand Crossing neighborhood. This month, they will present their work at the EPA's 2014 Sustainable Design Expo in Washington, D.C.
- 3 Eleven DePaul students received top honors for their oral and poster presentations in biology, molecular biology, environmental science, math, physics and computer science at the 2014 Spring Symposium and Research Conference in STEM. Hosted by the Illinois Louis Stokes Alliance for Minority Participation, the symposium brought together students, faculty and staff from across the state for two days of workshops and presentations. A total of 26 students from CSH and the College of Computing and Digital Media attended the symposium, along with seven DePaul faculty and staff members.











- 4 Karen Larimer, assistant professor of nursing, has been tapped as the next president of the Chicago Board of Directors of the American Heart Association (AHA). When Larimer takes the helm on July 1, 2016, she will be the first nurse to serve as president. Larimer was also recently named a fellow of the AHA.
- 5 Sophomores Kal Nastek and Gloria Zavala were recently awarded Blue Cross and Blue Shield of Illinois Health Sciences Scholarships. The math majors, who are the first DePaul students to receive the scholarships, were congratulated during an awards ceremony in February. Pictured: Karen Atwood (MBA '82), president of Blue Cross and Blue Shield of Illinois, Gloria Zavala, Kal Nastek and the Rev. Dennis H. Holtschneider, C.M., president of DePaul University.
- 6 Professor of Psychology Leonard Jason received \$2 million from the National Institutes of Health's Eunice Kennedy Shriver National Institute of Child Health and Human Development to support a five-year study on pediatric chronic fatigue syndrome. The study will focus on determining the prevalence of chronic fatigue syndrome in a sample population of 20,000 Chicagoland youths, as well as the syndrome's impact on physical functioning, school attendance and performance, and extracurricular activities.

- 7 Associate Professor of Nursing Mona Shattell, who is also associate dean for research and faculty development, was inducted as a fellow of the American Academy of Nursing (FAAN) last fall. While there are approximately 3 million nurses in the U.S., fewer than 3,000 have been honored with FAAN status.
- On Feb. 6, alumni and friends gathered at Phil Stefani's 437 Rush for an evening reception. More than 50 guests shared their DePaul memories, made new acquaintances, and caught up over drinks and hors d'oeuvres. Attendees included recent graduates as well as those who graduated decades ago, and all alumni enjoyed the opportunity to hear Dean Koocher offer remarks on the current state of the college and its exciting plans for the future.

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We welcome your story ideas, questions and comments. Please contact Kelsey Rotwein at (312) 362-6368 or krotwein@depaul.edu.

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