



WHAT DOES IT MEAN TO BE TOP TEN?

The KU Department of Geology has two of its graduate programs currently ranked among the top ten by *US News and World Report*. These programs are its two soft-rock programs, Paleontology and Sedimentology/Stratigraphy, reflecting two of the Department's traditional and ongoing strengths. Nationally, it is rare for any Geology Department, even very large ones, to have two of its graduate programs in the top ten. When compared to other Universities around the Nation, there is only one other Department that has both of its soft-rock programs ranked in the top ten (Michigan).

Admittedly, this is not the same as having the Jayhawk basketball team ranked in the top ten; we don't get Lindley Hall televised on ESPN each week or get visits from Dick Vitale. Come to think of it, maybe that's a good thing. But we do benefit. Many students use the rankings to help them decide where they will submit applications for graduate study, and this helps us with recruiting some of the very best students. Numbers and quality of applicants to the graduate program have been quite good, even during a time when many Geology graduate programs around the nation are experiencing severe problems recruiting good students. Moreover, the high rankings give us confidence that our strategic planning efforts are on the right track, with a strong focus toward building on strengths that

already exist, giving us incentive to strive for even higher rankings in sedimentology/stratigraphy and paleontology, and for giving our other strong programs a boost so they have potential to achieve top-ten rankings as well. Whereas the Department's rankings have never resulted in a parade down Massachusetts Street, they do help us in many tangible ways. The next time you see a parade for a top-ranked sports team, think about what it would be like to have one for the G-hawks.

NAVDAT - WHAT'S THAT?

NAVDAT is the Western North American Volcanic and Intrusive Rock Database, and believe it or not, it is based at KU, thanks to the innovation of KU Faculty. The information revolution has allowed database development and interpretation to be an important priority for many fields to move forward. Geology is no different, and those who win the competitions to build and maintain the database get the first crack at the data and can make the most important scientific contributions. A group of KU faculty and programmers has been working on the NAVDAT project for the last 3 years. This effort will catalog all Cenozoic igneous rocks in Western North America (including Canada and Mexico) to explore in detail the relation of magmatism with tectonic evolution. The results of the work so far are available on the web at <http://navdat.geongrid.org>. This site presents anima-

tions of volcanism and igneous geochemistry through time, as well as providing a detailed and flexible search interface to download and view data.

The project, funded by the National Science Foundation and the Department of Defense Geothermal Program Office, has been a collaborative effort between KU (**Doug Walker** and **Ross Black** with programmer **Todd Bowers**), University of Colorado, University of North Carolina, and Carnegie Institute of Washington, along with workers at UNAM in Mexico. Programmers at the Kansas Geological Survey also have played a large roll in creating a map interface. The database presently has over 1500 users a month accessing and retrieving data and is stimulating new research on the igneous rocks of the West.

KU AND ASBOG

ASBOG is the National Association of State Boards of Geology. By design, it serves as the link between state geologic registration licensing boards, and develops the standardized written examinations for applicants seeking licensure as professional geologists. In Kansas and around the nation, professional registration of geologists has become a fact of life for those geologists whose actions involve public health, safety, and welfare. The Department of Geology, in cooperation with the Kansas Geological Survey and Kansas Department of Transportation, is helping the community of geologists in the state by offering a Fundamentals of Geology refresher course to

help geologists prepare for the ASBOG licensure examination.

This course is offered free of charge to all who would like to take it. Eight instructors have volunteered their time to make this course a useful experience for the geologists of Kansas: six from the Department, one from the Kansas Geological Survey and one from the Kansas Department of Transportation. The course covers a broad range of subjects, including Structural Geology and Traditional Field Geology (**Doug Walker**), Near Surface Geophysics (**George Tsoflias**), Engineering Geology (**Bob Henthorne**), Field-oriented Hydrogeology (**Carl McElwee**), General Hydrogeology (**Gwen Macpherson**), Mineralogy, Igneous Petrology, Metamorphic Petrology (**Randy Van Schmus**), Geomorphology (**Rolfe Mandel**), and Sedimentology and Stratigraphy (**Tony Walton**). We think it has made a real difference to geologists here in Kansas, and plan to continue offering this service to our fellow geologists.

OIL FIELD TOOL TO PROVIDE SMOOTH RIDE

KU M.S. student **Juli Emry**, **Bob Goldstein** and **Evan Franseen** have developed a new tool that may prevent potholes. Recently the three KU researchers presented the results of their investigation to regional aggregate producers and Kansas Department of Transportation officials, and generated a lot of excitement. These *pothole busters* have found that they can use the natural gamma radiation of limestone aggregate resources in quarries as an indication of

their long-term durability when used in concrete highway pavements.

One of the most useful downhole tools in the oil industry is the gamma ray well log. Handheld instruments are now available and are capable of separating the natural gamma radiation from potassium, thorium, and uranium. In many types of limestone aggregate, clays lead to short aggregate lifetimes and lots of potholes. The gamma radiation from potassium seems to be a good measure of clay content, and is well correlated to aggregate durability. It appears that once limestone aggregates reach a certain threshold of potassium gamma-ray emission and clay content, they lose durability. Using the handheld tool allows quarry operators to prevent production of poor quality aggregate, thus preventing potholes and saving taxpayer dollars.

A JILLION G-HAWKS AT GSA

Much of the Department of Geology attended the annual meeting of the Geological Society of America, held in Denver in November. What a meeting for G-hawks! At the main meeting and associated meeting of the Society of Vertebrate Paleontology, there were 50 abstracts and presentations from the KU Department of Geology and Kansas Geological Survey. One of the highlights was a talk by KU faculty member **Rick Devlin**, who was invited to present a talk on the future of hydrogeology. He made the point that there still remains great opportunity for technical and conceptual innovation in the field and that hydrogeologists should think optimistically.

Also at the meeting, KU faculty members **Steve Hasiotis**, **Roger Kaesler**, and **Bob Goldstein** presented an invited workshop on grant writing. The course was attended by a standing-room-only crowd. Roger, Bob and Steve were in rare form, presenting on effective and ineffective writing, representing good science, and tips for success and failure. The examples of "what not to do" were quite entertaining, and the short course was a great tool for helping large numbers of students and for publicizing the talents of our faculty. The PowerPoint presentations are available on the web at www.geosociety.org.

In addition to technical presentations, the Department of Geology hosted a booth this year to publicize its program and to recruit graduate students, leading to great interactions with a large number of potential students. Many current KU students attending the meeting, faculty, and department staff member **Liz Gravatt** helped out with talking to visitors and registering graduate student applicants. We also hosted a reception for alumni in association with the meeting, with well over 50 people in attendance. For KU geologists, this was one of the best GSA meetings in recent memory. Current KU students, faculty and alumni were so prolific that it was difficult to find a poster session, oral session, or display without a G-hawk nearby.

HOW HOT AND WHEN?

Thermochronometers allow researchers to date the thermal history of rocks. Faculty members **Dan Stockli** and **Doug Walker**, and graduate student **Terrence Blackburn** have just

begun work on a project to develop a new thermochronometer useful in dating cooling history in sedimentary basins, hydrocarbon systems, subduction zones, and upper-crustal rocks. Dan and Doug have been awarded a two-year National Science Foundation grant to develop and calibrate the U-Th/He system in rutile (TiO₂). The new tool has the potential to quantify the timing and rates of a wide spectrum of upper-crustal to near-surface geologic processes; it should be widely applicable, because rutile is common in many magmatic rocks, high-grade metamorphic rocks, and sandstones. Development of new tools for understanding geologic processes are among the most exciting areas of geologic research, because successful application of the new tool typically spins off a wide variety of geologic discoveries.

BOOKS BY KU FACULTY DEFINE GEOSCIENCE FIELDS

One measure of a great faculty is leadership in research; and one measure of research leadership is authorship of field-defining books. The current cadre of KU faculty have written books used widely as research texts in the geosciences.

Bruce Lieberman's book, *Paleobiogeography: Using Fossils to Study Global Change, Plate Tectonics, and Evolution* is used widely by researchers and students in paleontology and plate tectonics.

Steve Hasiotis' book, *Continental Trace Fossils*, is garnering him wide recognition as the most important figure in the study of continental trace fossils. The study of trace fossils has been viewed as "mature"

by some, but Steve's work on the continental realm is inspiring a new generation of trace fossil workers to delve into the opportunities presented by paleoenvironmental work in the continental realm.

Bob Goldstein's book (with co-author T. J. Reynolds) *Systematics of Fluid Inclusions in Diagenetic Minerals*, is used worldwide by students and researchers in fluid inclusions. It has been described recently as a "classic" by SEPM and the Geochemical Society.

All three of these faculty members acknowledge the value in their investment of time in these book-writing projects. Each book has produced tangible intellectual and reputational dividends for the faculty, KU, and the Geosciences.

WHERE DOES A FUSULINID GO WHEN IT DIES?

While this may sound like a religious question, it is not—not really. In their new paper, *Fusulinid taphonomy: Encrustation, corrosion, compaction, and dissolution*, published in the journal *Palaios*, KU Faculty member **Roger Kaesler** and former student **Scott Hageman**, along with coauthor Tom Broadhead, have documented the journey that fusulinids take to their final resting place - and it's not heaven or hell - it's the Hughes Creek Shale, where literally trillions and trillions of them are preserved.

Fusulinids have to pass through a sort of geologic purgatory called taphonomy on their way to the grave. Taphonomy is the sum total of all the things that happen to an organism or its remains as it is transformed

from the biosphere to the lithosphere. Kaesler, Hageman and Broadhead have succeeded in developing new tools for interpreting paleoenvironment from fusulinid taphonomy. They can tell if a fusulinid died a quiet death at old age or by violence done by predators. They can tell if a fusulinid managed to survive an attack, spackling over injuries by secreting new calcite, and how the tests are incorporated into the sediment by examining corrosion, abrasion, and encrustation of the tests. As in many studies in geologic science, Kaesler and colleagues have shown that tiny things can answer sizeable questions.

GRADUATE STUDENT WINS UNIVERSITY- WIDE COMPETITION

Department of Geology Masters student, **Terrence Blackburn**, recently competed in a University-wide competition sponsored by Sigma Xi, the international honor society of research scientists and engineers. The competition was for undergraduate and graduate students in the behavioral, natural, or engineering sciences, and involved presentations on their research. This year, Terry won the competition in the graduate student category, by giving a presentation that stemmed from his undergraduate thesis project with **Dan Stockli** on Kansas kimberlites. Terry's presentation faced stiff competition, and we are proud of what he has done, especially considering the challenge he faced in competing with students who were working on cures for deadly diseases and other studies of obvious interest to the judges. Terry's accomplishment is a testament

to the quality of undergraduate and graduate students in the Department and we all wish him a hearty "well done."

NEW DIVERSITY INITIATIVE WITH PUERTO RICO

Thanks to funding by ExxonMobil, KU Geology has begun an initiative for enhancing diversity in the geosciences. **Luis González** and **Bob Goldstein** spent part of January at the University of Puerto Rico at Mayaguez in the first stages of a diversity initiative. This initiative will break down bar-

riers to career development for under-represented students in the geosciences.

To begin this initiative, Luis and Bob co-taught a short course for University of Puerto Rico students on carbonate diagenesis. The next step will be a joint field trip, to be led by Luis in Puerto Rico this Spring, for KU and University of Puerto Rico students. Future activities will continue to encourage interactions between the two programs. We are optimistic that this initiative will make a difference for the Geosciences, and will bring excellent graduate students into the KU program.

DON'T FORGET...

June 10-11, 2005 is the Field Camp Reunion in Cañon City, Colorado.

Roast Roger Kaesler in honor of his years of teaching field camp, see old friends, attend field trips, chuckwagon barbecue, camp on the field camp site or stay at the motel.

Please contact Liz Gravatt (egravatt@ku.edu or 785-864-5628) by **June 1** if you would like to attend.

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