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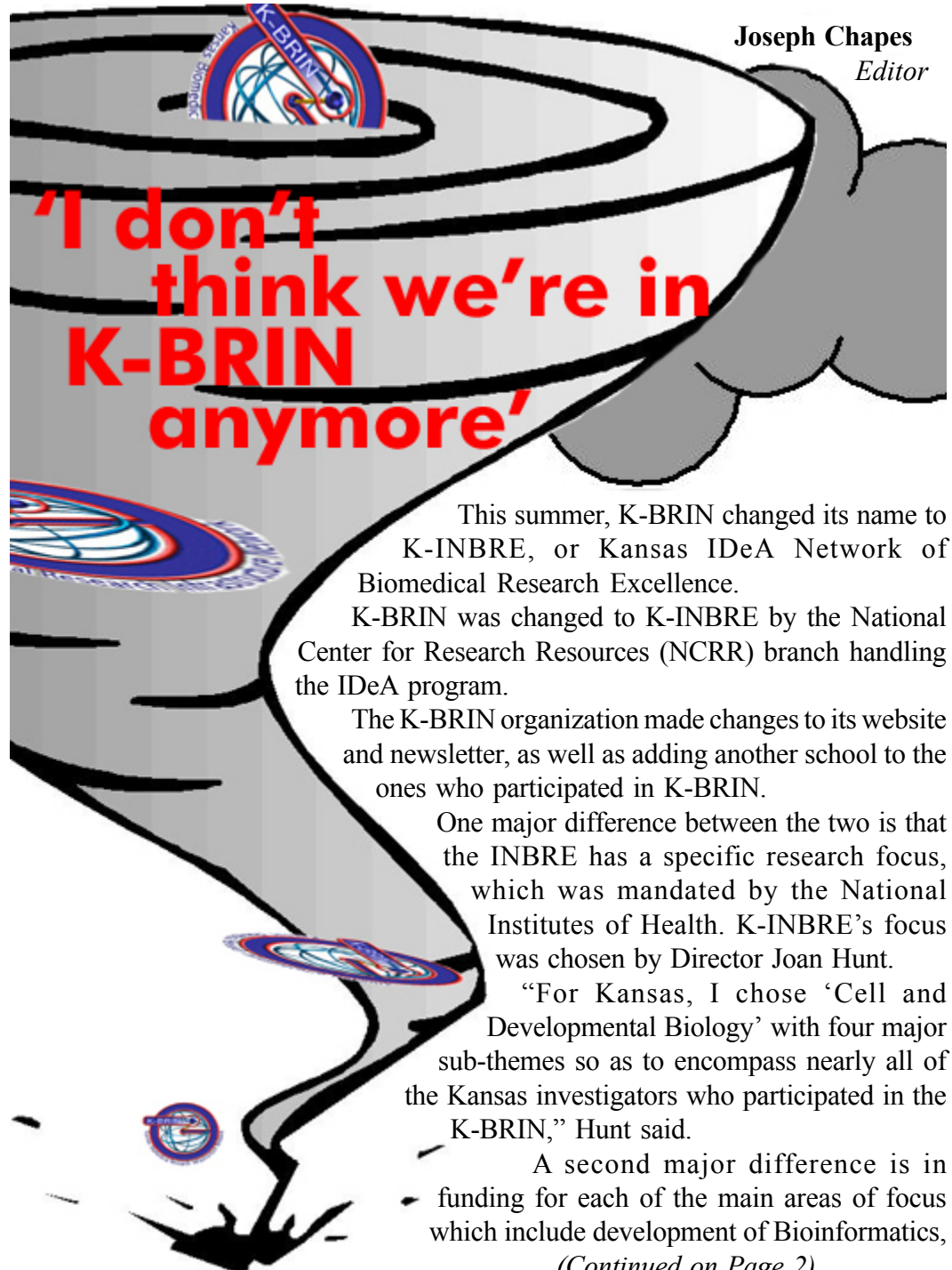
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Summer 2004 Volume 3 Issue 1

Joseph Chapes
Editor



**'I don't
think we're in
K-BRIN
anymore'**

This summer, K-BRIN changed its name to K-INBRE, or Kansas IDeA Network of Biomedical Research Excellence.

K-BRIN was changed to K-INBRE by the National Center for Research Resources (NCRR) branch handling the IDeA program.

The K-BRIN organization made changes to its website and newsletter, as well as adding another school to the ones who participated in K-BRIN.

One major difference between the two is that the INBRE has a specific research focus, which was mandated by the National Institutes of Health. K-INBRE's focus was chosen by Director Joan Hunt.

"For Kansas, I chose 'Cell and Developmental Biology' with four major sub-themes so as to encompass nearly all of the Kansas investigators who participated in the K-BRIN," Hunt said.

A second major difference is in funding for each of the main areas of focus which include development of Bioinformatics,

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K-INBRE Administration**Director**

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Funded by NIH RR16475

The K-INBRIEF Newsletter is published four times a year and distributed electronically. All pictures and picture illustrations, unless otherwise noted, are by Joseph Chapes.

Questions and comments can be sent to jchapes@ksu.edu.

**K-INBRE,
Continued***(Continued from Page 1)*

support for faculty (specifically new investigators) and support for undergraduate campuses. The National Institutes of Health outlined exactly how much could be spent on each area. The BRIN left this up to the primary investigator and the advisory committee.

Despite the requirements of the INBRE, the Kansas program stays much the same as before.

“We are still working on partnering our bioinformatics cores with genomics, lipidomics and proteomics, continuing and expanding our support for faculty, and supporting coordinator offices on undergraduate campuses - and with 30 percent higher budgets than we had under the K-BRIN,” Hunt said.

It is hard to tell if K-INBRE will be as successful as K-BRIN.

“History will judge this, but I believe that the K-INBRE may be more successful because we are doing what the NIH always stresses - focusing our research,” Hunt said. “The proposal contains plans for bringing along new investigators in cell and developmental biology who should ultimately be well funded investigators. In this respect, the INBREs resemble the COBRE grants, whose new investigator recipients have had stunning successes in garnering new NIH grants.”

The new investigators who will be brought in will be one at KUMC, two at KU in Lawrence and one at K-State during the first 2.5 years.

“The critical feature of both the K-BRIN and the K-INBRE is that the scientists who work in this initiative have committed to bettering our Kansas research environment,” Hunt said. “They see one another as partners and work splendidly together. It is this unusually close working relationship among scientists across the state that I hope to see again during the K-INBRE years, as I believe it is the major reason why our K-BRIN was successful. I have talked with BRIN directors from many other states and find that Kansas is truly unusual in this respect.”

KU Research Symposium

Joseph Chapes
Editor

On August 3, six K-BRIN students participated in the KU Summer Undergraduate Research Symposium at the University of Kansas.

The event was held at 10 a.m. on the second floor of Malott Hall.

Students who participated, along with their poster titles, were John Adib, “Cholesterol Displacement by Ceramide in Caveolin-1 Lipid Rafts,” Cara Rachals, “Lithium Chloride is a Regulator of Flagella Elongation in *Chlamydomonas*”, Kahlil Saad, “A Novel Mutation Suppresses the Pkd-2 Phenotype in *C. Elegans* and Maps to Chromosome II.”

Other participants included, Jason Shimanek, “Cloning, Overexpression, Purification and of HoloPchE from *Pseudomonas Aeruginosa*,” and Tim Kerr and Laura Wizenread, “Identification of a Functional



Laura Wizenread explains her project to a visitor to the KU Summer Undergraduate Research Symposium. (Photo by Cynthia Beall)

rab11mini Gene Construct Encoding a His-GFP-Rab11 Fusion Protein.”

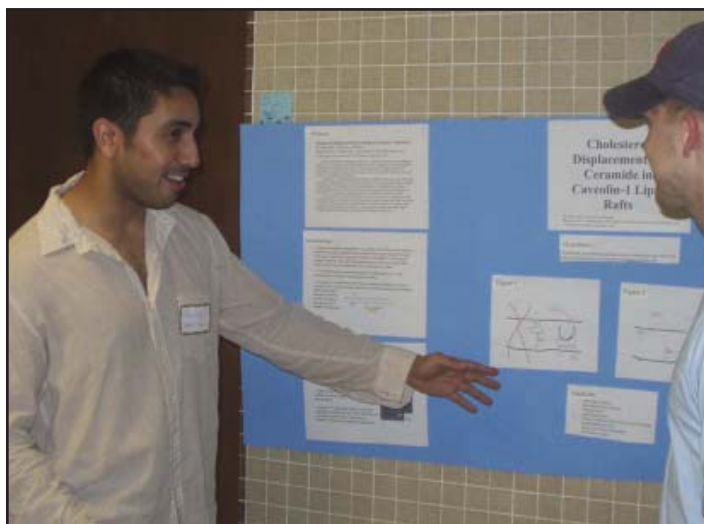
For Saad, his participation in K-BRIN has helped expand his scientific knowledge and experience.

“It’s given me the tools and time to learn a discipline in molecular biosciences that I didn’t know much about before,” Saad said. “I’ve also been able to meet with other professors and undergraduate researchers and learn about techniques and how they have been able to balance school and research.”

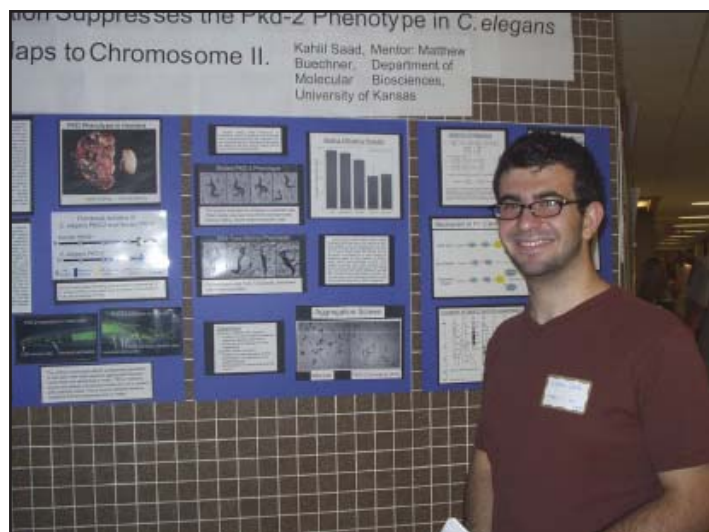
This belief is shared by Kerr, who has also benefitted from his experience with K-BRIN.

“The K-BRIN program has provided me the opportunity to carry out research under the guidance of a remarkable mentor and members of the School of

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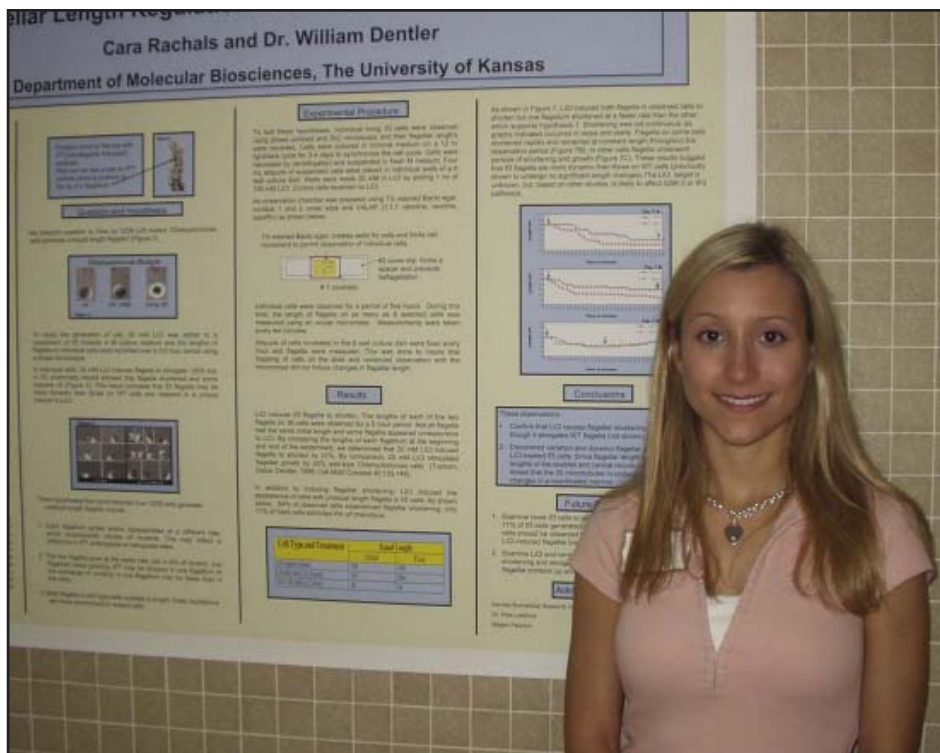


John Adib (Photo by Cynthia Beall)



Kahlil Saad (Photo by Cynthia Beall)

KU Research Symposium



Cara Rachals (Photo by Cynthia Beall)

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Pharmacy faculty,” he said. “It has enhanced my knowledge of rational drug design and aided my development as a future researcher in the field of bio-organic chemistry an immeasurable amount.”

By participating in research, students learn a lot about how to conduct scientific studies and grow as scientists.

“This experience taught me that research is not a fast process,” Rachals said. “There are periods of frustration followed by times of satisfaction, so if you want to do research, you should love the process. During this summer, I have found that I do enjoy research and hope to continue working in scientific research in the future.”



Tim Kerr (Photo by Cynthia Beall)



Jason Shimanek (Photo by Cynthia Beall)

Oklahoma's Langston University joins Kansas schools in K-INBRE

Joseph Chapes

Editor

As K-BRIN transitions into K-INBRE, it welcomes Langston University into the organization.

This new school is unusual in one respect, it is in Oklahoma! One may wonder how this school found its way into the Kansas based K-INBRE.

Sonya J. Williams, Langston's Campus Coordinator, found out about K-INBRE at the 2003 BRIN Regional Conference Meeting in Omaha, Nebraska.

"I was sitting on a bus with Dr. Joan Hunt and Dr. Paul Terronova one evening as we were leaving the conference area," Williams said. "The bus driver of the shuttle took us on a very long, out of the way bus ride back to the hotel. The ride was well over 40 minutes! We started talking and sharing about our campuses, and research goals and programs."

K-INBRE Director Joan Hunt invited Williams to participate in the next INBRE submission. LU was able to participate in K-INBRE because Oklahoma is also an INBRE-eligible state.

Williams hopes Langston students can gain much from K-INBRE.

"I hope that LU students take advantage of the opportunity to see what research is about," she said. "The ultimate goal is to encourage them to choose graduate education (doctoral level) after completing their undergraduate training! We have been somewhat successful in the past two years. I want the students to know that they have options, that not only Oklahoma Universities, but Kansas Universities will also be available as sites where they may pursue graduate education."

Langston University was established in 1897 by the Oklahoma Territorial Legislature as the Colored Agricultural and Normal College near Langston, Oklahoma. In 1941, the legislature officially adopted the popular name, Langston University, for the institution.

Langston University is unique as Oklahoma's only historically Black institution of higher education.

Langston University is also distinguished as the only institution of higher education in Oklahoma that has both a land-grant mission and an urban mission. The urban mission was established in 1978 as part of the state strategy for compliance with Title VI of the Civil Rights Plan.

The new urban mission has permitted the university to expand its program offerings in academic areas in which there was documented need and demand within the state, and in areas in which ethnic minority underrepresentation and under participation was evident.

The mission of Langston University, as augmented in 1978, includes the continuation of the university's purposes as an 1890 Land Grant Institution, as well as a new focus on using educational programs in order to have an impact on urban problems. This dual mission requires high levels of excellence in instruction, research, and community service, in both the traditional rural setting and in urban environments.

The urban aspect of the mission affords an opportunity for intellectual, professional and personal development through planned activities, internships, and other experiential training for students on the main campus, the University Center at Tulsa, and The Oklahoma City Urban Center. Langston University now serves over 4500 students.

At Langston, Williams has established a neuroscience research program. Williams has been at Langston for four years and teaches Natural Sciences Biology (Honors), Zoology, Cell Biology, Human Physiology, Biology Research Problems, Biology Literature Investigations, Practicum in Biology, and other classes.

Williams just received training in neuroimaging using Stereo Investigator and NeuroLucida which allows anatomical mapping and morphometry. She has published works related to steroid effects on the central nervous system (brain and spinal cord).

Williams contributed information for this article.

Fads, trends and changes:

Dr. Larry Williams
Contributing Writer

During my 28 years as coordinator of the undergraduate advising program in the Division of Biology at Kansas State University (KSU), I have observed a large number of fads, trends, and changes. These would include changes in hair and clothing styles of the students

(and staff), e.g., the baseball cap as the headgear of choice, indoor and out; most currently the flip-flops as appropriate footwear; the disappearance of the slide rule; the Power Point presentation replacing the chalkboard; women moving from a distinct minority to a definite majority of both biological science majors and admits to professional health schools and graduate schools; etc., etc. Three of the changes to be discussed here, and the first two only briefly, are: 1) changes in the number of biological science majors at KSU, 2) changes in the numbers of our biological graduates going on to graduate and professional health schools, and 3) changes in the way we encourage and make students aware of graduate school opportunities.

During the 1970's and most of the 1980's the KSU Division of Biology had about 240 students distributed

amongst our three majors, biology, fisheries and wildlife biology, and microbiology. Then over a six-year period our majors increased two and one-half fold and since 1995 we have stabilized at around 600 biological science majors. In

the old days (1980's) we averaged nine of our majors admitted to graduate programs and 14 to professional health schools per year. Since 1998, the numbers have averaged 14 per year to graduate

programs (approximately 60% Ph.D. and 40% M.S.) and 37 to health schools (almost all to medical, dental, optometry or veterinary). Note that although the number of students going into graduate and health schools has increased with the increasing number of biological sciences majors, those choosing graduate school are a lower percentage while those opting for a professional health school are a higher percentage of our current majors than in the 1980's.

With respect to undergraduate involvement in biological science research at KSU, the trend has been toward making the lab work a true research experience, increasing the number of students who gain that experience, and increasing the depth, i.e., longer times in the lab, more techniques learned, from that experience. This has been a four-step process. First, in the 1960's and 1970's the primary route for undergraduates gaining exposure to research (aside from those lucky enough to be in an N.S.F. Undergraduate Research Participation Program) was a part-time job, e.g., glassware washer, media maker or seed counter in a research lab. This entry point to research, essentially the "I think I can do that; I think I would like to do that" still plays an important role. Our second step was coupled with a decrease in graduate teaching assistant funding and a decrease in availability of quality graduate students. This second step was the realization by more and more research faculty that high-quality undergraduates could do quality research (as good as master's students) and be a positive force in a lab's progress.

Our step three was the active encouragement, which could include a small financial enticement for more students to get a taste of working on a real research problem in a real



Larry Williams received a Ph.D. from the California Institute of Technology in biochemistry. He was a NIH post-doctoral fellow for three years at the Univ. of Michigan before joining KSU in 1970. He is the Assoc. Director for Undergraduate Studies in the Division of Biology and coordinates the undergraduate advising program in the Division. He teaches Principles of Biology, Modern Genetics and a course in Biology of Aging. Williams is a University Distinguished Teaching Scholar. In addition, he has won Commerce Bank, Presidential and W.L. Stamey Awards for excellence in undergraduate teaching. In 2004, he won the Commerce Bank Award for excellence in undergraduate advising. Contact by phone (785) 532-5718 or email at larryw@ksu.edu

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KSU Coordinator notices an evolution in undergraduate research experience

research lab. In the 1980's our Center for Basic Cancer Research began offering \$500 scholarships to students who would agree to pursue a small research project for 6-10 hours per week over one semester in a lab whose work could be related to a basic understanding of cancer. And, for this experience the student could also gain course credit. Currently about thirty Undergraduate Student Cancer Research Awards are given annually.

Step four was to get the undergraduate research experience started sooner, to have it extend longer, and to reach a level of contribution where the student could be a co-author on publications. Since 1999 we have a group of students identified as Howard Hughes Medical Institute (HHMI) Undergraduate Research Scholars and since 2002 a group of Kansas Biomedical Research Infrastructure Network (K-BRIN) Undergraduate Research Scholars. Our K-BRIN, now K-INBRE, and HHMI Scholars are selected early, i.e., in the second semester of their freshman or sophomore years. Criteria for selection are well above average college entrance exam scores, a minimum GPA of 3.5, enrollment in rigorous science courses and an interest in a biological sciences research career (and for HHMI scholars an interest in medical school is also appropriate). These students are expected to give 450 hours per year to the research project for two years and to participate in annual research forums. For this effort HHMI and K-BRIN (now K-INBRE) scholars receive \$3500/year plus some travel funds. Currently we select 15 new HHMI and four or five new KINBRE scholars per year.

It is perhaps too soon to judge the effectiveness of our in-depth undergraduate research experience programs (HHMI and K-INBRE), but the following statements can be made. In the past three years, over half of our 15 or so majors annually admitted to medical school have had in-depth research. Most will never do research, but the experience, hopefully, will have some long-term benefits. Our numbers going on to graduate school have increased only modestly, but the composition of the group has changed somewhat. We have had several cases of students who found they had the knack for research and went on to Ph.D. or

M.D./Ph.D. programs who otherwise would have, in all likelihood, gone straight to medical school. Our in-depth research programs have a 20% attrition rate, i.e., one in five does not complete the two-year program. I don't see that as

a negative. Research is not for everyone and it's better to find out now than drop out of someone's graduate program a year or two down the line. Certainly the students we are now sending on to graduate school are more prepared to handle

graduate research and more knowledgeable about what they will face than our average graduate school candidate of the past.

In summation we have over the past 20 plus years, put increasing effort (and financial support) into getting more of our biological sciences majors involved in research and into making it a more in-depth experience. There is a certain amount of synergy to the whole thing. The more opportunities for undergrads we have, e.g., the Basic Cancer Center Research Awards, the HHMI and K-INBRE Research Scholars, the more it becomes "the word" among students to try for scholarships and the more good applicants we have. Currently, almost every one of our active Division of Biology research labs has one or two or three undergraduates working on individual research projects (in addition to the part-time hourly student employees). And, we have our majors working on projects in research labs in biochemistry, plant pathology, kinesiology, vet medicine, etc. The positive aspects of the whole undergraduate research program include: 1) a widespread recognition among KSU biological science research faculty that undergraduates can and do make solid contributions to the success of the research group, 2) a general recognition by many undergraduates that research experience both helps classroom understanding and is a plus in applying for post-bachelor's degree educational programs and 3) as a recruitment aid, i.e., a number of top high school science students are eager to do research and be directly involved with faculty. The negative aspect of our undergrad research programs is the worry about what will happen if and when the sources of our financial incentives, i.e., the HHMI and K-INBRE grants, go away.



ANNOUNCEMENTS

Biosciences and the New Economy in Kansas

Kansas Statewide EPSCoR Conference

September 8, 2004
Alumni Center
Kansas State University
Manhattan, KS

The University of Kansas Structural Biology Center

Building Dedication and Symposium on Protein Structure and Function

October 15 and 16, 2004
Lawrence, KS

Complete Program and Registration Information may be found on the COBRE website: www.medchem.ku.edu/COBRE or by Contacting Cynthia Beall (beall@ku.edu; 785-864-3674)

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2004

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If you are interested in speaking, presenting a poster, simply attending or would like more information, e-mail Bill Picking at picking@ku.edu or call (785) 864-3299

So that everyone can be properly accommodated, please contact Picking by Sept. 13.