

Diversity in Laboratory Animal Science: Issues and Initiatives

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Since diversity in the workplace began receiving scholarly attention in the late 1980s, many corporations and institutions have invested in programs to address and manage diversity. We encourage laboratory animal science to address the challenges and to build on the strengths that personal diversity brings to our field and workplaces. Diversity is already becoming increasingly relevant in the workplace and the laboratory animal science field. By addressing issues related to diversity, laboratory animal science could benefit and potentially fulfill its goals more successfully. To date, diversity has received minimal attention from the field as a whole. However, many individuals, workplaces, and institutions in industry, academia, and the uniformed services that are intimately involved with the field of laboratory animal science are actively addressing issues concerning diversity. This article describes some of these programs and activities in industry and academia. Our intention is that this article will provide useful examples of inclusion-promoting activities and prompt further initiatives to address diversity awareness and inclusion in laboratory animal science.

Abbreviations: AAVMC, Association of American Veterinary Medical Colleges; DVM, Doctor of Veterinary Medicine; IUSM, Indiana University School of Medicine; LARC, Laboratory Animal Resource Center of Indiana University School of Medicine.

Diversity in the laboratory animal science workplace has received minimal coordinated attention in the laboratory animal science field as a whole, but the issue of diversity is potentially important, and addressing diversity management could benefit the field. The challenges of working in a diverse work environment include language and communication difficulties when everyone does not share the same first language. Spoken and even written directions can be misunderstood, so that even when clear standard operating procedures are in place, misinterpretation of common phrases such as 'wipe down' equipment and 'water' the animals can lead to inappropriate or inadequate performance, with potentially serious consequences for the research or the animals. Cultural and religious attitudes on multiple topics may vary among personnel and affect interactions. Attitudes regarding animals can differ, such as what level of respect they deserve and whether certain species cannot be handled. Different attitudes about the appropriate way to interact with coworkers based on their sex, age, race, sexual orientation, and other attributes may cause friction among personnel. Diversity also brings the benefits of various perspectives to the workplace, with the potential to generate creative discussion and innovation. Correspondence of the workplace and customer-base diversity can promote improved understanding of the customers' needs and expectations. If properly managed to make everyone feel included, diversity

can lead to an enriched work experience and, hopefully, more satisfied personnel with good attendance and low turnover.

Diversity in the workplace in general began receiving scholarly attention in the late 1980s and early 1990s.^{1,28-32} Since then, awareness of, and research on, issues of diversity in the workplace have increased greatly. Before this research field developed, diversity in the workplace was mainly a legal issue. Most industrialized countries have laws that prohibit discrimination in employment based on a person's background or situation. In the United States, the Civil Rights Act of 1964 established the Equal Employment Opportunity Commission to enforce the law prohibiting employment discrimination based on race, color, religion, sex, and national origin. Additional laws and amendments have added age, disability, and pregnancy to the list.⁷² The Canadian Human Rights Act of 1977 prohibits discrimination based on race, national or ethnic origin, color, religion, age, sex, sexual orientation, marital status, family status, disability, or conviction for an offense for which a pardon has been granted.⁷³ European Union member states must follow the Employment Equality Directive (Directive 2000/78/EC), which prohibits employment discrimination based on religion, belief, disability, age, sexual orientation;²² the Racial Equality Directive (Directive 2000/43/EC) which prohibits employment discrimination based on race or ethnicity;²¹ and the Equal Treatment Directive (Directive 76/207/EC) which prohibits employment discrimination based on sex.²⁰ The United Nations agency, The International Labor Organization, passed the Convention concerning Discrimination in Respect of Employment and Occupation in 1958.⁴⁴ In 1998, The International Labor Organization passed the Declaration of Fundamental Principles and Rights at Work, which eliminates discrimination in respect to employment and requires United Nations member states to follow it, whether (or not) they had ratified the previous Convention.⁴⁵ In China, labor laws include The Labor Law of the People's Republic of China 1995 which prohibits discrimination based on

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a laborer's nationality, race, sex, or religious belief.⁶⁶ Expanding on this, the Employment Promotion Law 2008 forbids discrimination based on "ethnicity, race, gender, religious belief, etc."⁶⁶ In Latin America, several nations including Argentina, Brazil, and Venezuela have employment antidiscrimination coverage in specific laws or their constitutions.¹⁴

Although these laws were passed to protect the rights of individuals, the benefits of a diverse workforce have since been recognized, and many corporations and institutions have invested in diversity-initiative programs to manage diversity. Diversity among personnel in the workplace or classroom has been identified by industry and academia as an important source of benefits and challenges, which must be addressed for the institution to optimize its success. In general, studies continue to identify the connection between diversity and successful organizational performance.^{19,47,52,61} Studies have found improved performance in organizations with a more diverse workforce, an effect usually attributed to the 'business case' theory. This theory describes 3 ways in which diversity can benefit an organization's performance.⁴⁸ First, as the workforce becomes more diverse, recruiting from more diverse groups will be necessary to obtain the highest quality employees.⁴⁸ Second, an increasingly diverse population and more globalized market means a more diverse customer base. A more diverse workforce that matches the market demographics can provide 'market intelligence.'^{24,48} Third, because of varied information, perspectives, and cognitive styles, a more diverse workforce has stronger problem-solving and creativity skills than does a less diverse one.^{23,48} One study, for example, assessed multiple organizations and found that greater diversity of race and sex diversity was associated with increased sales revenue, more customers, a greater market share, and greater relative profits.³⁷

Managing diversity is challenging, because a more diverse workforce produces a heightened level of environmental conflict and potentially a decrease in overall performance. In fact, studies show that increased diversity serves to decrease group cohesiveness, which may lead to increased absenteeism and employee turnover.^{62,76} The hardship associated with managing workforce diversity is often weighted against the very benefits described previously, which include a "broader range of contacts, information sources, creativity, and innovation."²⁵ The resulting conflict actually is essential to producing environments that lead to the questioning of assumptions and forces organizations to work beyond easy, routine solutions. This growth produces the beneficial creativity seen in diverse organizations.^{36,37} According to one author,⁶³ an organization's ability to successfully manage its diversity and convert it to increased productivity depends on the organization's culture of innovation. Homogeneity creates an organization that is more cohesive but possibly less adaptable and innovative.³⁷ When diversity exists in an organizational culture that encourages innovation, performance increases. As a "knowledge-based resource," diversity needs an appropriate environment to fully realize its benefits.⁶³

The benefits of diversity to science have been explored, leading to general acceptance of the concept that different experiences and approaches help lead to novel and innovative science.^{16,50} According to Wanda E Ward, The National Science Foundation's Deputy Assistant Director for Education and Human Resources, the National Science Foundation believes that "the scientific and engineering enterprise is strengthened by the intellectual diversity of thought, as well as the diversity and the composition of the participants, and by the belief that excellence exists everywhere."¹⁷ The National Academies has developed a

committee, the Committee on Underrepresented Groups and the Expansion of the Science and Engineering Workforce Pipeline, which addresses the role of diversity in the science, technology, engineering, and mathematics workforce and emphasizes the value of diversity to keeping the United States innovative and competitive.⁷⁴ The National Institutes of Health, "recognizing a unique and compelling need to promote diversity in the biomedical, behavioral, clinical and social sciences research workforce", has created grants to promote diversity in health-related research. Researchers with NIH grants can apply for funds to "improve the diversity of the research workforce by supporting and recruiting students, postdoctorates, and eligible investigators from groups that have been shown to be underrepresented."⁵⁹

Influenced by research on business success and scientific innovation relative to diversity, many individuals, workplaces, and institutions in industry, academia, and the uniformed services that are intimately involved with the field of laboratory animal science are actively addressing issues concerning diversity. Laboratory animal science as a field could benefit by addressing diversity in a coordinated way in order to fulfill its goals as successfully as possible. Laboratory animal science is dedicated to increasing, sharing, and using knowledge about the care and use of animals in scientific research. The American Association for Laboratory Animal Science is dedicated to "...the humane care and treatment of laboratory animals and the quality research that leads to scientific gains that benefit people and animals..."³ and "... building and disseminating a knowledge base in laboratory animal science for the education and training of those who work in this field."⁴ Probably all of the individual members of the laboratory animal science community share these goals. However, to reach these goals most effectively as a unified field, laboratory animal science must promote and embrace each member's ability to fully participate and contribute.

For laboratory animal science, as a field, to address diversity, we will need to establish what diversity means in this context and why it is important. Because diversity is a commonly used term, with connotations and assumptions, we authors believe it is helpful to explain what we mean by diversity and what aspects we choose to emphasize. There are multiple standard definitions of diversity, including "the fact or quality of being diverse; difference; variety or multiformity."⁶ In general, diversity refers to individual or group differences that exist when people come together, such as in our workplaces or the laboratory animal science field. Historically, the term is used in relation to underrepresented groups, but underrepresentation is relative to consideration of the whole group. Because we here discuss both corporate and academic institutions, as well as different fields and disciplines, it is important to use inclusive definitions of diversity and underrepresentation.

Academia defines underrepresented minority in multiple ways. The research side of academia, heavily funded by the NIH, relies on the NIH's definition of a "group underrepresented in biomedical research, defined as the following: people with disabilities, people from disadvantaged backgrounds, and racial and ethnic groups such as blacks or African Americans, Hispanics or Latinos, American Indians or Alaskan Natives, and Native Hawaiians or other Pacific Islanders."⁵⁸ Within the field of medicine, the Association of American Medical Colleges definition is referenced as "...those racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population" which are blacks, Hispanic Americans, Native Americans (that is,

American Indians, Alaskan Natives, and Native Hawaiians), and mainland Puerto Ricans.⁹ The Association of American Veterinary Medical Colleges (AAVMC) uses a definition of underrepresented in relation to veterinary medicine to focus its diversity initiatives: underrepresented refers to "...populations of individuals whose advancement in the veterinary medical profession has historically been disproportionately impacted by 6 specific aspects of diversity (gender, race, ethnicity, and geographic, socioeconomic, and educational disadvantages) due to legal, cultural, or social climate impediments."¹² This definition is specific to veterinary medicine, and many would say that the 6 aspects of concern should be expanded to include many more, including age, physical ability, sexual orientation, and religion. In addition, the underrepresented groups within a field may vary over time or geography. In veterinary medicine, women have historically been underrepresented but currently constitute the majority of persons in the United States entering veterinary colleges. In 2007, the American Veterinary Medical Association trumpeted that women had reached representative parity with men in the profession.⁵⁵ However, the historical underrepresentation of women continues to persist in positions of influence throughout the field. These definitions of underrepresented do not all focus on the same groups, but all help illustrate the effect difference can have on person's opportunity to develop. The effect on individuals and underrepresented groups may be the most noted, but workplaces, institutions, and the field as a whole can be affected by diversity or the lack thereof.

Published data are not available on diversity within the laboratory animal science field, and the overall demographics of laboratory animal science personnel have not been studied. An online survey of some AALAS branch members provides some information. One of the current authors sent the survey to members through the AALAS branch email lists. Because the total number of recipients was unknown, the response rate is unknown. Of the 265 survey respondents, those who responded to the question 'please select your gender or gender-identity,' 73.2% self-identified as female, 24.9% identified as male, and 1.9% declined to answer. Race/ethnicity was self-identified as white (72.5%); black or African American (7.2%); Hispanic or Latino (4.9%); multiracial (1.9%); Asian American, Asian, or East Indian (1.5%); American Indian or Alaskan Native (1.1%); other (2.6%); and Native Hawaiian or other Pacific Islander (0%); and 8.3% who declined to answer. Respondents reported a wide range of ages and educational levels. Age ranges were younger than 25 y (2.3%), 25 to 30 y (21.9%), 31 to 45 y (37%), 46 to 60 y (32.1%), and older than 60 y (5.7%); 1.1% of the 265 respondents declined to answer this question. The highest education level achieved can be summarized as those without college-level degree (20.1%); those with a 2- or 4-y college degree (52.8%); those with masters, doctorate, or professional degrees (36.4%); and those who declined to answer (0.8%).² Although this information is an interesting start at examining the laboratory animal science field's demographic makeup, a more thorough study that reaches more members of the field and has a known response rate is required to obtain a better understanding of the current membership diversity.

Workforce and Globalization Issues

The purpose of the current article is not to focus on diversity itself but to look at its effect in laboratory animal science and to encourage laboratory animal science to address the challenges and build on the strengths that diversity brings to our field and workplaces. One reason for examining diversity's effect in

laboratory animal science is to be ready for future conditions. Recently, increasing diversity in the workplace has accelerated, because Western society is increasingly pluralistic. For example, in the United States, the demographic makeup of the population is changing. In 2008, the Census Bureau revised the agency's long-held projection that white or Caucasian Americans would cease to be the largest racial group by 2050. The agency now predicts the growth among Hispanics, African, and Asian Americans and other minority groups will increase more rapidly and that the shift will occur in 2042.⁷⁷ In addition, by 2030 the nation's 'baby boomer' generation will be 65 and older, making up nearly 20% of the United States population.⁷⁷ By mid-century, the United States can expect more linguistic diversity, a wider range of cultural norms, and a continued aging of its workforce.

Another trend that will have increasing influence on laboratory animal science is the globalization of science, engineering, and technology. Scientific research and production are increasing in some parts of the world that were previously not as active, and a large part of the new activity is in Asia—China and, more slowly, India.³³ The many reasons for increased globalization are beyond the scope of this discussion. However, one reason that scientific activity is affected is the changing ratio of science and engineering doctorates inside compared with outside the United States. Trend data suggest that by 2010, China will produce more doctorates than the United States in these fields, and the European Union will produce nearly twice as many as the United States.³³ The National Science Foundation has partnered with Sigma Xi, the Scientific Research Society, to produce workshops and reports regarding globalization in science and engineering. They have emphasized the need to ensure that the future science and engineering workforce in the United States is 'globally competent,' with the ability to collaborate effectively with researchers from anywhere in the world that research occurs.^{67,68} With these rapid demographic changes, the laboratory animal science field must begin to position itself to develop its future workforce and examine how best to meet the needs of its future, increasingly international clients.

One goal of laboratory animal science is to recruit and retain laboratory animal science professionals, and with an increasing diverse workforce, that means methods to recruit and retain must consider diversity. The laboratory animal veterinarian is one laboratory animal science profession for which recruitment of adequate numbers has been a concern for some time. The number of veterinarians trained in laboratory animal medicine does not meet the current or projected need. From 1997 to 2002, the number of NIH grants using animals increased by 31.7%, and from 1995 to 2001, position announcements for laboratory animal veterinarians increased by 250%.⁶⁰ However, the increase in veterinarians completing postdoctoral training in laboratory animal medicine between 1997 to 2002 was only 25%.⁶⁰ Efforts to recruit more veterinarians into laboratory animal medicine must include exploring methods to recruit from a more diverse population. The AAVMC currently has a diversity initiative program that includes recruitment and retention of veterinarians from underrepresented groups. This program offers an example for laboratory animal medicine and science. The DiVersity Matters initiative was launched by the AAVMC in 2005.¹⁰ The initiative focuses on 4 areas: increasing racial and ethnic diversity among students; increasing racial and ethnic diversity among faculty; creating inclusive learning and working environments in the colleges of veterinary medicine; and infusing the veterinary curriculum with learning

opportunities for cultural competence. Since its inception, the AAVMC dramatically increased outreach to underrepresented populations at scientific meetings, outreach to minority serving institutions of learning, and consultations with many of the nation's colleges of veterinary medicine. Nationally the number of enrolled students of color has increased by 35% in just 5 y¹¹ (Figure 1). These first years of the initiative demonstrate that increasing outreach to underrepresented populations coupled with intentional efforts to recruit applicants can yield desired results. The DiVersity Matters initiative expects to expand its efforts over the next several years through increased research on the effect of campus environment on students, faculty, and staff; increased access to leadership training for prospective and new underrepresented faculty; and the development of diversity-related Doctor of Veterinary Medicine (DVM) program curriculum modules.¹³

The University of Tennessee's College of Veterinary Medicine created its own Office of Diversity in 2006 in an effort to coordinate the college's diversity initiatives. The office's objectives are articulated in a 6-point plan: to create and sustain a welcoming, supportive, and inclusive campus climate; to attract and retain greater numbers of individuals from under-represented populations into faculty, staff, and administrative positions; to attract, retain, and graduate increasing numbers of students from historically under-represented populations and international students; to develop and strengthen partnerships with diverse communities in Tennessee and globally; to ensure that curricular requirements include significant intercultural perspectives; and to prepare graduate students to become teachers and researchers in a diverse world. Following the AAVMC's lead, the College has defined diversity in very broad terms to include gender, race, ethnicity, and geographic, socioeconomic, and educational disadvantage. They also recognize nontraditional practice interests (that is, laboratory animal medicine, public health, production animal medicine) as a component of diversity. Many of the Office of Diversity's activities center on recruitment and retention of a diverse student population, such as recruiting at regional minority serving institutions. In an effort to integrate diversity education into the curriculum, each fall, the office hosts a diversity symposium for first-year veterinary students. In addition, each year the Office hosts an International Food Day, during which all individual contributions to the college's diversity are celebrated around various international food offerings. Periodically, the Office of Diversity hosts 'brown-bag' lunch seminars on various topics, including cultural, racial, ethnic, and religious diversity. All programs are open to the entire college constituency, and the Office of Diversity frequently invites community members to participate in the programs as speakers or facilitators. Of note, the Office of Diversity has been successful in organizing a chapter of VOICE (Veterinary Students as One in Culture and Ethnicity). In addition, the Office of Diversity coordinates a summer enrichment program for high-school students and another for college-age students. The Veterinary Summer Experience Program for Tennessee High-School Students has been an integral part of the college for more than 13 y. These activities have had a positive effect on underrepresented student recruitment and retention, as the College has seen a dramatic increase in the number of underrepresented students enrolled in the DVM program. Although underrepresented student enrollment remains low at the College, the number of underrepresented students has more than doubled since the University of Tennessee's College of Veterinary Medicine began its initiative in 2006¹¹ (Figure 2).

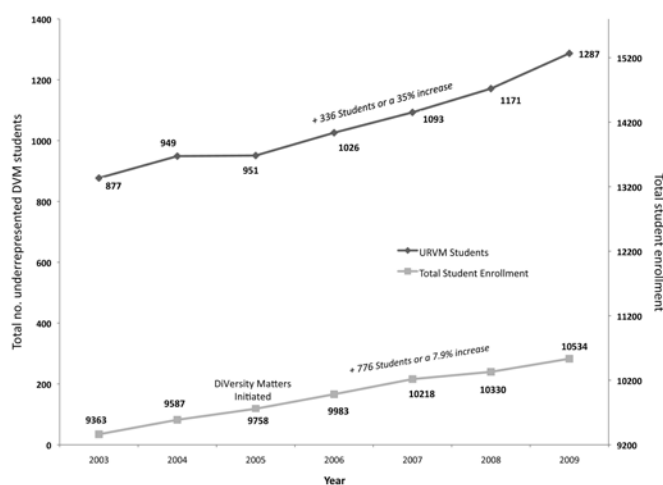


Figure 1. The number of underrepresented (URVM) students in US Colleges of Veterinary Medicine increased by 35% from 2005 (when the AAVMC DiVersity Matters program was initiated) to 2009. The overall number of veterinary students enrolled increased by 7.9% during the same 4 y. Figure based on information from reference 11.

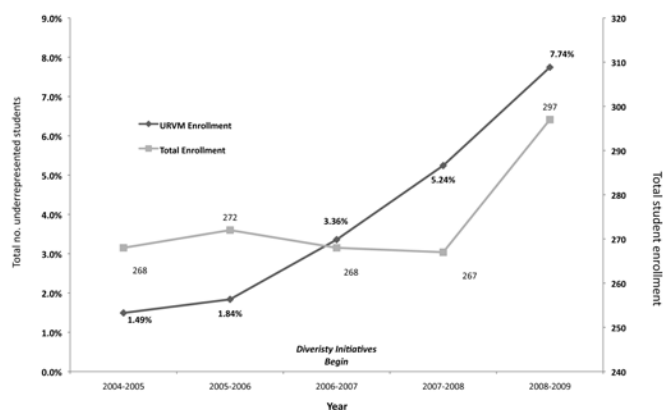


Figure 2. At the University of Tennessee's College of Veterinary Medicine, the percentage of underrepresented (URVM) students has increased to 7.74% since its diversity initiatives began in 2006. The year before the initiatives began, the percentage of underrepresented students was 1.84%. Figure based on information from reference 11.

Addressing Diversity and Inclusion in the Workplace

Another reason to address diversity issues is to ensure inclusion. The Association of American Colleges and Universities defines inclusion in the context of diversity as "...the active, intentional, and ongoing engagement with diversity...in ways that increase one's awareness, content knowledge, cognitive sophistication, and empathic understanding of the complex ways individuals interact within systems and institutions."¹⁸ Although increasing laboratory animal science professionals' diversity can be advantageous in reflecting an increasingly diverse society and general workforce, increased diversity alone is not sufficient. For the future workplace to be as productive and successful as possible, laboratory animal science also must encourage inclusion proactively. Encouraging inclusion in laboratory animal science would establish an environment which encourages the development and full participation of each of us to benefit our workplaces, our coworkers, the researchers, the research, and the animals.

Industry has been examining and promoting inclusion for years, with apparent success, and many corporations involved with laboratory animal science have diversity-awareness

programs that can provide guidance for laboratory animal science as a whole. In 2006, in 'The Top 100 Diversity Employers,' based on a survey by Universum Communications, diverse students ranked healthcare (including pharmaceuticals and biotechnology) as the most popular industry for employment.⁷⁸ Multiple pharmaceutical and biotechnology companies have been highly ranked on various organizations' lists of diversity-friendly employers. Some examples are Johnson and Johnson, Pfizer, Genetech, GlaxoSmithKline, Merck, Wyeth, Amgen, Eli Lilly, Procter and Gamble, Novartis Pharmaceutical, and Abbott.^{26,78} This list is not comprehensive with regard to healthcare companies with diversity initiatives, but it demonstrates that many prominent companies are investing in such programs. These diversity-initiative programs include recruitment methods and initiatives to build a pipeline of skilled workers, as well as workforce diversity training to encourage inclusion.³⁸ Some specific examples of activities include outreach efforts and scholarships for minority students and 'affinity groups' for underrepresented groups to encourage social support and networking.⁴³

One illustrative example is Eli Lilly and Company, a prominent pharmaceutical company. At Lilly, diversity and inclusion are part of the fabric of doing business: from the workplace to the marketplace. The 'bottom line' for the company is to deliver innovative new medicines that provide improved outcomes for individual patients. To create and support innovation, Lilly scientists, engineers, and medical professionals need to understand and value patient differences and integrate them into development and commercialization decisions and practices. This need requires that the company fully engage and value its increasingly diverse workforce through workforce and workplace practices that consistently leverage differences. The first step to achieving these goals is to build greater self-awareness and empathy at the individual level. All United States Lilly employees are required to complete '40,000 Stories,' a training program that has employees write and share their personal stories. The next step is to give leaders the skills and ability to lead diverse work teams. Lilly has established 10 competencies for leading diverse teams. Building these competencies starts with 7 h of training that are mandatory for all United States leaders. The training uses experiential learning and simulations to teach basic concepts such as microinequities and microaffirmations. Microinequities are "apparently small events that are often ephemeral and hard to prove, events that are covert, often unintentional, frequently unrecognized by the perpetrator, which occur whenever people are perceived to be 'different'." Microaffirmations, the reverse, are "subtle or apparently small acknowledgments of a person's value and accomplishments. They may take the shape of public recognition of the person, 'opening a door,' referring positively to the work of a person, remembering someone's name."⁶⁵ The training also teaches key steps to move from representation to learning and effectiveness. Additional training, on-the-job and in-the-community experiences, and on-the-job and in-the-community mentoring relations to develop these skills are then available to leaders to strengthen their ability to lead diverse teams.

Academic institutions have also been focused on diversity and its effect on their missions, because many studies have shown that campus diversity initiatives have positive effects on minority and majority students.⁶⁹ Laboratory animal science programs based in academia can be involved. In 2003, the Supreme Court held in *Grutter versus Bollinger* that there is a compelling interest in attaining a diverse learning environment.⁷¹ The rationale for this decision held that a diverse learning environment produces

higher quality students and thus future professionals. In fact, research submitted during the Supreme Court deliberation found several specific benefits to a diverse learning environment. First, students in structurally diverse environments are less likely to self-segregate by race throughout their lifetime. Second, students in these environments report having more positive academic, social, and personal experiences, and finally, students in these environments show "the greatest engagement in active thinking processes, growth in intellectual engagement and motivation, and growth in intellectual and academic skills."³⁵ Certainly, a level of controversy remains regarding legal avenues to advance diversity in academic and professional settings, as evidenced by state-based referenda banning the practice of affirmative action. The data are varied on the effects of such bans on diversity initiatives in higher education. Within US veterinary colleges such variation also exists. Three institutions—University of California-Davis, Washington State University, and Michigan State University—operate under state affirmative action bans. As shown in Figure 3, these institutions demonstrate mixed experiences in admitting underrepresented students within the college under such a ban.¹¹ Numerous factors may underlie these outcomes including state demographics, institutional recruitment efforts, and external, private scholarships, which are not affected by state affirmative action bans. Legal frameworks for affirmatively acting to admit qualified students from diverse backgrounds do not exist in a vacuum but are a part of a constellation of activities and programs that pursue diversity at an educational institution.

Some of academia's focus on diversity involves formal institutional programs and training. However, other methods of focusing on diversity are more informal day-to-day workplace decisions and are not part of a specific diversity-awareness program. One key component of an academic research institution is the laboratory animal science department that supports and facilitates the research. This importance means that laboratory animal science professionals are at the interface of research with scientists. Inherent to the interactions between lab animal science professionals and scientists and among lab animal science professionals themselves is the opportunity for different work cultures, people, and disciplines to intermingle. The results of such diversity are often both challenging and beneficial. For example, Indiana University School of Medicine (IUSM) is an education institution and a formidable research institution

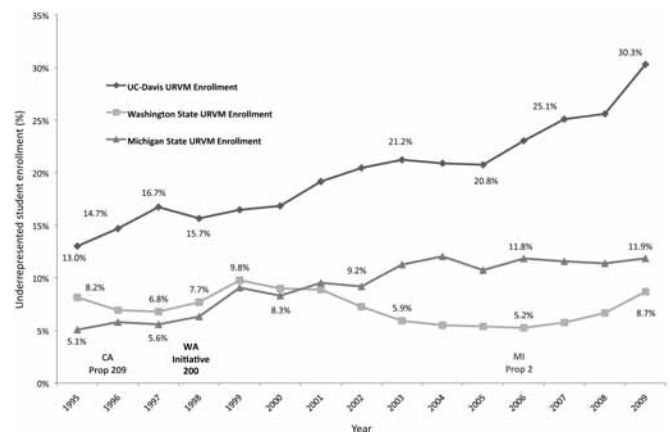


Figure 3. The Colleges of Veterinary Medicine at the University of California–Davis, Washington State University, and Michigan State University operate under state affirmative action bans. The enrollment trends for the percentage of underrepresented (URVM) students under the state affirmative action bans vary among these institutions. Figure based on information from reference 11.

holding more than \$244 million in research grants and contracts, including more than \$116 million in awards from the NIH.³⁹ As of 2008, IUSM (tied with University of Illinois, Chicago College of Medicine) graduated the largest matriculating class among medical schools in the United States.⁵ IUSM conducts a broad range of basic, translational, and clinical research to improve health, prevent disease, better train physicians, and provide the foundation for Indiana's life sciences economy.³⁹ In so doing, the interaction of diverse people in the research labs, clinics, and classrooms is a necessity. Of course, such interactions among diverse people come with benefits and challenges. In all areas, but also where IUSM's research mission and diversity mission meet, proactive steps are taken to address challenges and take full advantage of the benefits of diversity in the laboratory.

The IUSM's primary research mission is to promote human health through the performance of the highest quality, ethically conducted, basic and clinical research.⁴⁰ The diversity mission is to create an environment in which every person can succeed.⁴¹ Steps to address both missions are evident in all areas of IUSM education and research. To investigate IUSM's Laboratory Animal Resource Center (LARC) activities regarding diversity, LARC personnel were interviewed. Interestingly, personnel initially identified no areas in which diversity had been specifically addressed, and no efforts to foster or promote diversity in the LARC were reported despite the fact that of the 18 technicians, 11% to 24% are underrepresented minorities at any given time (the percentage varies).⁴² The LARC also employs 3 veterinarians (1 female, 2 male, and all Caucasian).⁷ On further discussion, LARC personnel described a robust diversity portfolio of numerous creative and sometimes informal mechanisms, processes, protocols, policies, resources, and programs that together rendered an effective diversity effort that simply was not identified specifically as such. Both formal and informal diversity initiatives include: 1) staff training to ensure that staff are comfortable with the information needed to pass necessary exams to advance in their careers in laboratory animal science; 2) professional development of staff whereby faculty members mentor staff about conference attendance and make available conference registrations so that staff can gain knowledge about the resources to advance their careers; 3) custom-fitting powered air-purifying respirators to fit properly over facial hair worn for cultural or religious reasons; 4) increasing religious sensitivity by removing religious decorations; 5) increased written communication through email rather than verbal communication to minimize errors and communication barriers; 6) posting of photos of personal protective equipment in addition to written information on animal room doors to reduce written language barriers; 7) the use of American English Intonation: Effective Intercultural Communication for the Healthcare Professional workshops (mostly used by basic scientists); and 8) the potential future use of Support for Recruiting Underrepresented Faculty funds (available funding to support faculty diversity) to increase diversity in the LARC faculty.

LARC addressed miscommunication, which appeared to be the greatest challenge, in 2 different types of interactions: 1) interactions between the research labs and the LARC and 2) interactions among the LARC faculty and staff. Miscommunication was proposed to perhaps result from the many different languages being spoken or one common language being spoken with different intonations, accents, and figures of speech. Miscommunications stemmed from verbal requests, usually by phone, to change protocol such as withholding food or changing a light-dark cycle. Such verbal requests that were inaccurately understood or inaccurately communicated led

to ruined experiments, compromised data, hurt feelings, and disputes. Further details of implementation of initiatives 5 and 6 (increased written communication by email rather than verbal communication and posting of photos of personal protective equipment in addition to written information on animal room doors to reduce written language barriers) provide examples of how miscommunication due to diverse languages was decreased. To accommodate speakers of different languages and to combat the frustration that was present in this diverse setting, the LARC team requested that all requests be submitted in writing by email. In addition, within the LARC, changes were made such that instructions, when possible, were posted both in writing (in English) and in photos. For instance, personal protective equipment (for example, gloves, masks, gowns) that was needed to enter certain areas previously had been posted only in writing, but now photos of the items are posted with the written instructions. What resulted was a more effective, efficient, accurate, organized, and rapid transmission of requests and the information pertinent to the requests and ultimately better science. The IUSM's LARC has identified means for both proactively addressing challenges and exploiting the benefits of diversity in the lab animal science setting. Although diversity efforts can at times seem obvious, like common sense, or exist in attitude, effective tools for building diversity can go overlooked. Within the IUSM laboratory animal science professional setting, the attitude was simply one of efficiency, achieved by reducing or removing any barriers to the very important science.

Conclusion

Research indicates that an organization's culture influences the success of diversity management and diversity's effect of performance.⁷⁵ In general, the combination of diversity and an innovative culture leads to increased performance.⁶³ An innovative organization supports "new ideas, novelty, experimentation, and creative process that may result in new products, services, or technological processes."⁵⁴ Fortunately, because of its goals and mission, laboratory animal science is innovative and encourages creativity and alternative approaches. Therefore, laboratory animal science should be positioned to benefit from diversity.

One essential tool for addressing diversity successfully is training. Diversity training is offered by half of United States companies with more than 100 employees⁵³ and by 36% of firms of any size.⁵¹ Two types of diversity training are generally recognized. First, awareness or sensitivity training is intended to bring certain issues to employees' attention. Second, skill-based training in areas such as communication skills and conflict resolution are meant to facilitate working in a diverse environment. Both are important for a successful program.⁴⁶ An important part of a diversity training program is an initial needs assessment, performed to develop an organizational appropriate program. A needs assessment should examine the organization (structure, policies), operations (tasks, jobs), and personnel (performance and competency).⁶⁴ In addition, one-day training sessions are not sufficient for a successful program, because ongoing training is required to change behaviors.⁴⁹

Organizations and workplaces seeking advice or information on diversity issues may refer to a variety of resources. Several professional organizations promote diversity in science. The Collaborative for Enhancing Diversity in Science,¹⁸ The Diversity Alliance for Science,²⁷ and Building Diversity in Science¹⁵ are 3 general ones. The National Association for Blacks in Bio is a network of African-American and other people of color in the biosciences, and produces the *NABB Journal*.⁵⁶ Women in

Bio brings women executives in biotechnology or life sciences business together for networking and seminars.⁷⁹ The Society for Advancing Hispanics/Chicanos and Native Americans in Science holds conferences and presents awards to encourage participation in the sciences.⁷⁰ Laboratory animal science departments in academia may be able to consult with an institutional resource. The number of institutional diversity offices and officers at universities and colleges is increasing,³⁴ and a National Association for Diversity Officers in Higher Education, with over 120 institutions represented, was created in 2008.⁵⁷ These offices should be available to offer support and advice. Commercial organizations also provide diversity initiatives.

Laboratory animal science organizations have opportunities to provide leadership and assistance to their members. Possible areas to be developed include seminars at national, district, and regional AALAS meetings; education and training programs incorporated into current programs such as the AALAS Learning Library; scholarships and model mentoring programs for underrepresented students to enhance the job pipeline; affiliation groups to offer support and networking; and providing certification training and examinations in languages other than English.

Individuals, workplaces, institutions, and the field as a whole potentially are affected by our diversity. We authors believe that when institutions, workplaces, and individuals pay attention to the challenges of diversity and make efforts toward inclusion, laboratory animal science and scientific research can benefit. We have provided some useful examples of inclusion-promoting activities and resources for addressing diversity issues in the workplace. We hope that this article will also prompt further initiatives to address diversity awareness and inclusion efforts in laboratory animal science, as diversity will clearly become increasingly relevant in the workplace and in the laboratory animal science field. However, diversity alone, unattended, may not bring the benefits it promises. For diversity to provide benefits such as enhanced problem-solving, a group needs to develop "an effective discussion process."⁴⁸ Let the discussion begin!

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