

Workshop C Collaboration Case Study

Margo Geddes has been offered a doctoral fellowship to work with Professor Suzanne Midas on an exciting experimental project. Professor Midas shares with Margo her idea to develop a new method for making thin films that can be used as photovoltaic devices. After some trials, Professor Midas and Margo succeed in the synthesis of these thin films. The results represent a major breakthrough and lead to two publications in Science. Margo is first author and Professor Midas is second author.

At this point, Professor Midas mentions to Margo that she has been collaborating for several years with another research group in Malaysia on a chemical sensor project where thin films very similar to the one used by Margo have been used. One of the students in Malaysia has recently discovered that doping the sensor films with small amounts of gold leads to significant improvements in performance.

Professor Midas recommends to Margo that she try a similar doping experiment. Margo agrees, but points out that it might be a good idea to do first conduct some multi-physics computer simulations to verify that the doping would indeed be beneficial. Professor Midas is intrigued by the proposition but tells Margo that she does not have the expertise to guide Margo in such a computer simulation. She encourages Margo to seek collaboration with another faculty member, Professor Orhan, who is an expert in such simulations, and during grant renewal adds Professor Orhan as a co-PI to her grant.

The computer simulations conducted jointly with Professor Orhan give encouraging results, and Margo proceeds with her doping experiments in Professor Midas' laboratory. The doped thin films prove to be indeed better than the undoped films. Professor Orhan presents the experimental results and computer simulations at an international conference. He includes Margo and Professor Midas as co-authors of his conference paper.

Later, Professor Midas finds out that Professor Orhan has already applied for a patent on the doping idea, with only Margo listed as co-inventor. A few months later, Professor Orhan and Margo submit a paper to Nature that describes the theoretical and experimental approach to the synthesis of these high-performance photovoltaic thin films, without including Professor Midas as co-author. When Professor Midas confronts Professor Orhan about this situation, he points out that his theoretical contribution was the key to the discovery and the patent.

Discussion Questions

- Q1. What issues do you see in this case study that might be violations of ethics?
- Q2. What could Professor Midas have done to avoid the conflict with Professor Orhan?
- Q3. What could Margo have done differently?
- Q4. What conflicts of interest do you see in this case?

Workshop C Case Study for Small Group Discussion ¹

Professor Anna Pelagatti and Professor Charles Han are faculty members at Connecticut Southern University. They have been collaborating on a research project with Dr. Canton, a scientist with American Alloys, Inc. The three recently co-authored and submitted a paper that reports new welding techniques with potential novel applications in manufacturing. The process involves contributions from metallurgy, systems control and laser technology. The journal returned the paper to the authors with two very positive reviews, suggesting only minor revisions.

While revising the paper, one of Prof. Pelagatti's postdocs, who is also a co-author, presented data at a lab meeting showing that the metallurgical results reported in the article are much more dependent on the alloy mixture than is described in the paper. The postdoc's data shows that if the concentration of aluminum in the alloy is increased three-fold, the weld strength is nearly cut in half.

In light of these results, Prof. Pelagatti argues that the paper should be withdrawn until the new findings can be incorporated. Dr. Canton, whose company is planning to begin extensive R&D on the techniques, strongly objects to this course of action. He argues that the results of the paper are reproducible, the interpretations of the results straightforward, and so the paper should be published with the minor revisions suggested by the reviewers. Dr. Canton also suggests that the new results may be the basis for another article, and that these metallurgical data shouldn't even be mentioned in the current paper. Prof. Han, as the junior member of the group whose research is funded by both the federal government and American Alloys, Inc., is not sure what to do. He doesn't want to choose sides, since he is certain to upset at least one party, including his graduate student who has conducted research that will be noted in the paper.

[As you discuss the questions below, note any details not described above that would influence your conclusions one way or the other.]

- Q1:** How do you think the manuscript should be published? As is, updated with the new data, or another alternative?
- Q2:** If no agreement can be reached on how to proceed, who should be consulted to help decide?
- Q3:** Do the authors have an obligation to inform the journal editor immediately of the new findings?
- Q4:** What aspects of any new findings should influence the authors on whether to alert the editor?
- Q5:** Would Prof. Han be justified in sidestepping this decision and allowing his two colleagues decide how to proceed?
- Q6:** Should any of the graduate students or postdocs involved in the collaborators' research have a say in how to proceed?
- Q7:** Do you see any potential conflicts of interest that would require monitoring in this collaboration?
- Q8:** If so, how would potential conflicts of interest be monitored so as not to improperly influence the actions of the collaborators?
- Q9:** Do any of the three collaborators have potential conflicts of interest that should stop them from taking part in making the final decision on how to proceed?
- Q10:** What, if anything, should the collaborators disclose to their graduate students and postdocs about potential conflicts of interest in this project?

¹ Adapted from Kalichman M. *Scientific Integrity: Online Course in Responsible Conduct of Research: Collaboration and Mentoring*, <http://ethics.ucsd.edu/courses/integrity/assignments/collaboration1.html>, downloaded 6/3/2011. (Case in online course from ASM Press, 2000, *Scientific Integrity* by F.L. Macrina, used by UCSD with permission.) Also Atlanta Clinical and Translational Science Institute, "Ethical Dilemmas in Scientific Research and Professional Integrity," <http://www.actsi.org/areas/erks/ethics/mentoring.html>, downloaded 6/3/2011.

Guidelines to Practice under the AIAA Code of Ethics

Hold paramount the safety, health, and welfare of the public in the performance of their duties.

(click to hide)



- a. Recognize that the lives, safety, health and welfare of the public are dependent upon professional judgments, decisions and practices.
- b. Seek opportunities to be of service in professional and civic affairs and work for the advancement of safety, health, and well-being of our communities.
- c. Report suspected violations of this element of the code to the proper authority and cooperate in furnishing further information and assistance as required.

2. Promote the lawful and ethical interests of AIAA and the aerospace profession. *(click to show)*



- a. Comply with public law and regulation.
- b. Avoid the appearance of impropriety.
- c. Report to employers, clients, or government, as appropriate, any matters believed to represent a contravention of law, regulation, health, safety or ethical standards.
- d. Refrain from retaliating against those who make lawful reports about contraventions of law, regulation, health, or safety.
- e. Promote fair and unbiased opportunities for all.
- f. Charge fairly for services rendered and fulfill obligations as agreed – honoring contracts, agreements, and assigned responsibilities.

3. Reject bribery, fraud, and corruption in all their forms. *(click to show)*



- a. Do not knowingly engage in business or professional practices of a fraudulent, dishonest, or unethical nature.
- b. Promote the lawful and ethical interests of the AIAA and aerospace profession.

4. Properly credit the contributions of others, accept and offer honest and constructive criticism of technical work; and acknowledge and correct errors. →

(click to show)

- a. Take care that credit for professional work and accomplishments are given to those to whom credit is properly due.
- b. Accurately present and explain one's work and its merit, and avoid any act that would promote personal interests at the expense of the integrity, honor, and dignity of the profession.
- c. Do not maliciously or indiscriminately criticize the work of another.
- d. Perform comprehensive and thorough evaluations of technical work, addressing potential impacts and including analysis of possible risks.

5. Avoid harming others, their property, their reputations or their employment through false or malicious statements or through unlawful or otherwise wrongful acts. → *(click to show)*

- a. Perform professional work with care, thoroughness and accuracy.
- b. Do not intentionally, recklessly, or repeatedly fail to perform services with competence.
- c. Respect the intellectual, financial, personal and real property interests of others.

6. Issue statements or present information in an objective and truthful manner, based on available data. → *(click to show)*

- a. Reject all forms of research or testing misconduct and report all misconduct including fabrication, falsification, and plagiarism when it is observed.
- b. Do not disseminate untrue, unsubstantiated, or exaggerated claims regarding technical matters.
- c. Be objective, truthful, and complete in professional statements, professional reports, or expert testimony.
- d. Express professional opinions only when founded on a background of technical competence.
- e. Safeguard AIAA's reputation and integrity by ensuring that any public statements relating to AIAA which are not official statements of AIAA, are properly portrayed as the opinion of the individual making them.

7. Avoid real and perceived conflicts of interest, and act as honest and fair agents in all professional interactions. [\(click to show\)](#)



- a. Inform employers, clients, or other professional associates of any relationships, interests, or circumstances that could influence, or could be perceived to influence, your judgment.
- b. Protect the interest of employers and/or partners by preserving confidential information.
- c. Do not disclose proprietary information concerning business affairs or technical processes of any present or former employer, client, or other professional associate without consent.
- d. Issue no statements, criticisms, arguments or professional opinions that are paid for by interested parties, unless it is indicated on whose behalf those statements are made.
- e. Ensure that technical contributions are not compromised or biased by a conflict of interest or other inappropriate influences.
- f. Do not accept compensation, financial or otherwise, from more than one party for the same service without the consent of interested parties.

8. Undertake only those technical tasks for which we are qualified by training or experience, or for which we can reasonably become qualified with proper preparation, education, and training. [\(click to show\)](#)



- a. Engage and cooperate with specialists whenever the employer, client, or professional associate's interests are best served by such an arrangement.
- b. Do not certify plans or documents dealing with subject matter outside our areas of expertise by virtue of education or experience.
- c. Do not falsify or permit misrepresentation of their academic or professional qualifications or experience.

9. Maintain and improve our technical and professional competencies throughout our careers and provide opportunities for the professional development of those engineers under our supervision. [\(click to show\)](#)



- a. Keep current in our areas of specialty by engaging in professional practice, participating in continuing education courses, reading technical literature, and attending professional meetings and seminars.
- b. Promote the advancement of the aerospace profession by interchanging information and experience with other professionals and students, and by contributing to public communication media, and to the efforts of engineering and scientific societies and schools as appropriate.
- c. Approach the mentorship of students and young professionals as a matter of public trust, treating students fairly, respectfully, professionally, and without exploitation.
- d. Endeavor to extend the public knowledge of aerospace science and its achievements.

- e. Provide opportunities for the professional and ethical development of students and colleagues.

10. Treat fairly and respectfully all colleagues and co-workers, recognizing their unique contributions and capabilities. [\(click to show\)](#) →

- a. Protect the proprietary interests or confidences concerning the business affairs or technical processes of current and former employers and colleagues except where disclosure or reporting is required by law, or consent granted.
- b. Do not maliciously injure the professional reputation, prospects, or practice of another.
- c. Without personal bias or agenda, acknowledge and recognize the contributions of colleagues.
- d. Encourage colleagues to participate fully in the activities of AIAA.

AIAA gratefully acknowledges the contributions of the following technical societies to this revision of the Code of Ethics:

- American Chemical Society
- American Institute of Chemical Engineers
- American National Standards Institute
- American Society of Civil Engineers
- American Society of Mechanical Engineers
- Institute of Electrical and Electronics Engineers

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The alcohol industry gave the government money to prove moderate drinking is safe

This practice is more common than you think.

By Julia Belluz | [@juliaoftoronto](#) | julia.belluz@voxmedia.com | Mar 21, 2018, 9:50am EDT



The researchers behind the big government study reportedly told alcohol industry executives that the trial “represents a unique opportunity to show that moderate alcohol consumption is safe and lowers risk of common diseases” — before they had even enrolled their first patient. | [Albert Mollon/Getty Images](#)

Over the weekend, the [New York Times](#) published a bombshell report on alarming ties between the alcohol industry and the National Institutes of Health. Specifically, five alcohol companies helped fund — and potentially shaped the design of — a 7,800-person randomized controlled trial overseen by the National Institute on Alcohol Abuse and Alcoholism, a center at the NIH. The trial is supposed to answer the long-simmering question of whether moderate drinking truly reduces the risk of cardiovascular disease.

The most shocking detail in the story: The researchers behind the study reportedly persuaded alcohol industry executives to fund them by arguing the trial “represents a unique opportunity to show that moderate alcohol consumption is safe and lowers risk of common diseases” — before they had even enrolled their first patient.

The study “is not public health research — it’s marketing,” Michael Siegel, a professor of community health sciences at Boston University School of Public Health, told Times reporter [Roni Caryn Rabin](#).

The story is, without a doubt, troubling and raises many questions about research integrity at NIH. For now, the agency is [investigating the debacle](#).

And several questions linger: Why would one of the world’s elite publicly funded scientific institutions turn to the alcohol industry for fundraising? If it needed the money, why did it seemingly fail to set up an adequate firewall between the industry and the researchers? Why were the researchers promising conclusions before starting the study?

But it’s also, to some degree, [business as usual in science](#) today.

Dozens of industry-sponsored studies have shaped our perceptions of food and beverages, from the **blueberries we eat for breakfast** to the **red wine** we drink with dinner and **dark chocolate we snack on** at night. This trial again shows "the great prevalence of the belief that corporate funding has no influence on research," despite reams of evidence to the contrary, said New York University nutrition professor **Marion Nestle**.

That naiveté, apparently, can be found even at one of the most prestigious research institutions in the world.

This \$100 million study is designed to answer a long-simmering health question — brought to you, in part, by Heineken and Carlsberg

Before we get into the systemic problems in science funding, we need to unpack a bit of the context around the study and the Times's allegations.

On the question of whether moderate alcohol consumption is good for you, there is evidence that it's **associated with a reduced risk of coronary heart disease and a higher life expectancy**. But much of this evidence comes from observational research, which involves simply looking at the correlation between certain exposures (i.e., alcohol) and health outcomes (i.e., heart attacks). And these studies can be riddled with confounding factors.

People who drink and people who don't drink may be different in fundamental ways besides their alcohol consumption habits, and these differences may warp the results of the observational studies. Drinkers may be more social, or eat more olives and nuts, for example, or have more income, and these characteristics — not the wine they drink with dinner — may help them live longer.

So we have sorely needed a high-quality randomized controlled trial data on this question, where thousands of people are randomly assigned to drink moderate amounts of alcohol or not and are followed for years. This could eliminate the problem of confounding factors in the observational studies.

But "the challenge of a study like this — because it's 8,000 patients, following them for years and tracking them closely — is that it's just incredibly expensive," said **Jason Block**, a physician and researcher at Harvard Medical School. "And it would be unusual for NIH to be able to support by itself a trial of that size."

To get the funding, the Times reports, the researchers — including the study's lead investigator, **Kenneth Mukamal** of Harvard, and **Ken Warren**, the former acting director of NIH's alcohol abuse institute — reportedly pitched leading companies in the alcohol sector, including Anheuser-Busch InBev, Heineken, and Diageo.

Through FOIA requests and interviews, the Times's Rabin uncovered that the NIH actively courted the industry, traveling to meetings and presenting study designs in 2013 and 2014 ahead of the trial:

The presentations gave the alcohol industry an opportunity to preview the trial design and vet the investigators. Indeed, the scientist leading the meetings was eventually chosen to head the huge clinical trial.

They also made the industry privy to pertinent details, including a list of clinical sites and investigators who were "already on board," the size and length of the trial, approximate number of participants, and the fact that they could choose any beverage. By design, no form of alcohol — wine, liquor or beer — would be called out as better than another in the trial.

Though NIH officials told the Times they had not solicited funding, and Mukamal denied discussing his planning with industry representatives, Rabin says, "a different picture emerges" from emails, travel vouchers, and interviews.

The **NIH is now investigating** whether the researchers violated federal policy by soliciting donations, and they're appointing outside experts to review the design of the study. We don't yet know the full story, and there's surely more to uncover. (I have asked both the NIH and the principal researcher involved for comment, and haven't yet received full replies; I will update this story when I do.)

But the result of these meetings is that Anheuser Busch InBev, Heineken, Diageo, Pernod Ricard, and Carlsberg helped pay **\$67.7 million of the \$100 million government study**, which is **currently underway**. And even more troubling is that if you were a patient looking to enroll in the trial through the online **clinical trials registry**, you'd have no way of knowing about the industry's involvement because that funding is not disclosed there.

The problem of research funded by food and beverage companies

Thanks to ample **research on pharmaceuticals**, we've known for decades that industry money can distort science and influence medical practice. And doctors and researchers have had to reckon with the ugly consequences — **noticeable harm and even deaths**.

Over the years, they've taken a number of steps to reduce the risk of bias and improve transparency in clinical trials. The steps include launching **clinical trials registries** (like **ClinicalTrials.gov**) as well as **sunshine legislation**, which requires pharmaceutical and device companies to publicly disclose all the doctors they give money to and in what amount.

"The scientific research enterprise has contended, dealt with, and discussed pharmaceutical funding of research for a long time," said Harvard's Block. "But when you bring in other industries intentionally interested in supporting research as well — we haven't contended with that much." And that includes nutrition research.

As the number of inflation-adjusted dollars available for NIH research has shrunk over the past decade, researchers studying the health effects of food and drink have increasingly turned to industries for money, **as I've reported**. And companies like Anheuser Busch InBev and Heineken have been happy to work with them.

Many others involved in health research, most notably NYU's Nestle — who has written a forthcoming book called **Unsavory Truth: How Food Companies Skew the Science of What We Eat** — have pointed out that this leads to more studies that come to conclusions favoring the funders.

Consider this **review of studies** on sugary drinks, which showed how independently funded studies tend to find a correlation between soda consumption and poor health outcomes. Studies funded by soda makers, by contrast, are less likely to find such correlations.

Or this **investigation** of 206 publications on the health effects of milk, soft drinks, and fruit juices: Studies that were funded by beverage companies were four to eight times more likely to come to favorable conclusions about the health effects of those beverages.

In Nestle's **analysis of 76 industry-funded food studies**, between March and October 2015, 70 reported results that were favorable to the funder. This led her to question whether the research was science or just marketing.

How bias creeps into science and shapes what we think about nutrition

This science trickles down to consumers through the media in the form of often confusing and contradictory messages about their health. And it shapes the choices we all make about food, which is part of the reason companies are so eager to invest in research.

This was clear in Vox's investigation of **how dark chocolate** was turned into a health food. We analyzed 100 health studies that were funded or supported by one of the world's largest chocolate makers, Mars. And 98 of them, it turned out, carried conclusions that were favorable to the funder in some way — promoting everything from chocolate's heart health benefits to cocoa's ability to fight disease. It's no wonder Americans now view dark chocolate as a "healthy indulgence" instead of what it is: candy.

The glowing conclusions in these studies don't necessarily arise because researchers are evil or corrupt. Often the researchers working with industries are elite investigators who honestly believe their views. (The NIH alcohol study was led by one of the world's foremost experts on the health effects of alcohol.)

But the problem of the industry-sponsored science enterprise is that it can shape the agendas of researchers, dictate the questions they pursue, and give minority views more prominence than they otherwise would have.

We saw this when the **New York Times revealed that a Coca-Cola-backed group** was quietly funding researchers who downplayed the link between excessive calorie consumption and obesity. These researchers instead emphasized the dominant role of exercise — a view that isn't shared by independent obesity and exercise scientists — misleading consumers along the way.

The NIH-alcohol study is not unique

The involvement of the alcohol industry in the NIH study, and the apparent deterioration of any firewall between funders and the researchers, raises the question of whether the study is biased by design.

There's strong evidence that even small amounts of alcohol consumption by women increase the risk of breast cancer, for example. But **the NIH study** will only look at the impact of alcohol on the cardiovascular system and, secondarily, on diabetes and cognitive decline, after an average of six years — much too soon to detect any cancers that might develop.

So at best, the study could fail to reveal the full impact of a habit (moderate drinking) many now consider benevolent. At worst, it could give people a false sense of security about the healthfulness of alcohol.

"If you want to know if moderate drinking is good for you, bad for you, or indifferent, you design a study to do that," Nestle summed up. "If you want to prove moderate drinking is good for you, you design a study like [the NIH study]."

That view wasn't shared by other nutrition researchers, who felt the study design was strong, despite the industry funding. Harvard's Block said that a long-term randomized controlled trial on the impact of alcohol on heart health was needed, even if it omits cancer information for now. "They've designed [the study] in the best possible way — and the researchers have a pretty robust track record."

Richard Bazinet, a nutrition researcher at the University of Toronto, said, "We'd all love NIH to have a budget to fund studies without any industry influence, but it doesn't seem to be the reality anymore."

Indeed, this study, with its industry involvement, is certainly not unique. Another **major randomized controlled trial** designed to answer a long-simmering health question — whether cocoa really prevents cancer and cardiovascular disease — is also underway, involving 22,000 patients. Run by researchers at Brigham and Women's Hospital and the Fred Hutchinson Cancer Research Center in Seattle, it's partially funded by — you guessed it — the chocolate maker Mars.

Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations

Preamble. Research collaborations that cross national, institutional, disciplinary and sector boundaries are important to the advancement of knowledge worldwide. Such collaborations present special challenges for the responsible conduct of research, because they may involve substantial differences in regulatory and legal systems, organizational and funding structures, research cultures, and approaches to training. It is critically important, therefore, that researchers be aware of and able to address such differences, as well as issues related to integrity that might arise in cross-boundary research collaborations. Researchers should adhere to the professional responsibilities set forth in the *Singapore Statement on Research Integrity*. In addition, the following responsibilities are particularly relevant to collaborating partners at the individual and institutional levels and fundamental to the integrity of collaborative research. Fostering the integrity of collaborative research is the responsibility of all individual and institutional partners.

Responsibilities of Individual and Institutional Partners in Cross-Boundary Research Collaborations

General Collaborative Responsibilities

- 1. Integrity.** Collaborating partners should take collective responsibility for the trustworthiness of the overall collaborative research and individual responsibility for the trustworthiness of their own contributions.
- 2. Trust.** The behavior of each collaborating partner should be worthy of the trust of all other partners. Responsibility for establishing and maintaining this level of trust lies with all collaborating partners.
- 3. Purpose.** Collaborative research should be initiated and conducted for purposes that advance knowledge to the benefit of humankind.
- 4. Goals.** Collaborating partners should agree at the outset on the goals of the research. Changes in goals should be negotiated and agreed to by all partners.

Responsibilities in Managing the Collaboration

- 5. Communication.** Collaborating partners should communicate with each other as frequently and openly as necessary to foster full, mutual understanding of the research.
- 6. Agreements.** Agreements that govern collaborative research should be understood and ratified by all collaborating partners. Agreements that unduly or unnecessarily restrict dissemination of data, findings or other research products should be avoided.
- 7. Compliance with Laws, Policies and Regulations.** The collaboration as a whole should be in compliance with all laws, policies and regulations to which it is subject. Collaborating partners should promptly determine how to address conflicting laws, policies or regulations that apply to the research.
- 8. Costs and Rewards.** The costs and rewards of collaborative research should be distributed fairly among collaborating partners.
- 9. Transparency.** Collaborative research should be conducted and its results disseminated transparently and honestly, with as much openness as possible under existing agreements. Sources of funding should be fully and openly declared.
- 10. Resource Management.** Collaborating partners should use human, animal, financial and other resources responsibly.
- 11. Monitoring.** Collaborating partners should monitor the progress of research projects to foster the integrity and the timely completion and dissemination of the work.

Responsibilities in Collaborative Relationships

- 12. Roles and Responsibilities.** Collaborating partners should come to mutual understandings about their roles and responsibilities in the planning, conduct and dissemination of research. Such understandings should be renegotiated when roles or responsibilities change.
- 13. Customary Practices and Assumptions.** Collaborating partners should openly discuss their customary practices and assumptions related to the research. Diversity of perspectives, expertise and methods, and differences in customary practices, standards and assumptions that could compromise the integrity of the research should be addressed openly.
- 14. Conflict.** Collaborating partners should seek prompt resolution of conflicts, disagreements and misunderstandings at the individual or institutional level.
- 15. Authority of Representation.** Collaborating partners should come to agreement on who has authority to speak on behalf of the collaboration.

Responsibilities for Outcomes of Research

- 16. Data, Intellectual Property and Research Records.** Collaborating partners should come to agreement, at the outset and later as needed, on the use, management, sharing and ownership of data, intellectual property, and research records.
- 17. Publication.** Collaborating partners should come to agreement, at the outset and later as needed, on how publication and other dissemination decisions will be made.
- 18. Authorship and Acknowledgement.** Collaborating partners should come to agreement, at the outset and later as needed, on standards for authorship and acknowledgement of joint research products. The contributions of all partners, especially junior partners, should receive full and appropriate recognition. Publications and other products should state the contributions of all contributing parties.
- 19. Responding to Irresponsible Research Practices.** The collaboration as a whole should have procedures in place for responding to allegations of misconduct or other irresponsible research practice by any of its members. Collaborating partners should promptly take appropriate action when misconduct or other irresponsible research practice by any partner is suspected or confirmed.
- 20. Accountability.** Collaborating partners should be accountable to each other, to funders and to other stakeholders in the accomplishment of the research.

OUR VISION: Michigan Engineering aspires to be the world's preeminent college of engineering serving the common good.

WORLD

We have a global perspective in all we do. We conduct research, teaching, service and leadership at scale.

PREEMINENT

We strive to be the best we can be at everything we do. We employ a "Great to Best" mindset as we seek to improve. We focus on excellence and impact.

COLLEGE OF ENGINEERING

We will place a focus on our engineering disciplines. We will emphasize innovation and technological progress.

COMMON GOOD

We are embracing our public charter and ethos, with a commitment to serve all. We are closing the gaps in the State of Michigan and beyond.

OUR MISSION: Michigan Engineering provides scientific and technological leadership to the people of the world. We seek to improve the quality of life by developing intellectually curious and socially conscious minds, creating collaborative solutions to societal problems, and promoting an inclusive and innovative community of service for the common good.

The mission of the University of Michigan is to serve the people of Michigan and the world through preeminence in creating, communicating, preserving and applying knowledge, art and academic values, and in developing leaders and citizens who will challenge the present and enrich the future.

OUR VALUES: In pursuing our vision and mission, members of the University of Michigan College of Engineering community will value:

- **Leadership and excellence**
True to being "Leaders and Best," we do not settle. We forge paths that inspire others, and push relentlessly for quality and preeminence in all we do.
- **Creativity, innovation and daring**
"We've always done it this way" is never how we do it. We seek to improve the quality of life. Bold thinking and non-traditional action are among the tools we rely on to solve problems and create opportunities.
- **Diversity, equity and social impact**
The best mix of talent achieves the greatest outcomes. People with different skills, backgrounds, identities and perspectives are necessary for us to realize our vision. Opportunities are created for all, and where barriers exist, we close the gaps. Every member of our community gets to be heard, should be involved and must be empowered to achieve to their full potential. We serve the common good.
- **Collegiality and collaboration**
Camaraderie is a strength. When we disagree, we remain civil. We succeed in facing complex challenges by working together — across the lab, classroom or globe. Teamwork is fundamental to how we operate. We cannot fulfill our potential unless we are combining our strengths. Our individual abilities are joined to accomplish a united vision and mission.
- **Transparency and trustworthiness**
A consistent respect for truth breeds good relationships. We depend on open and honest sharing of data, facts and individual perspectives. In difficult situations, where discretion is required or conversations are sensitive, we acknowledge the limits of what can be shared. Trust must be preserved.