thetech.com

WEATHER, p. 2 FRI: 61°F | 48°F Sunny. SAT: 67°F | 49°F Cloudy

Volume 142, Number 23 Thursday, October 20, 2022

Oceantation marks the first aquarium trip for junior class Brant: The event felt 'representative of us as a class'

despite logistical challenges and unexpected changes

By Srinidhi Narayanan NEWS EDITOR

Oceantation, the Class of 2024's aquarium trip intended as a substitute for the traditional freshman class aquarium trip, took place Oct.

Traditionally, MIT students visit the aquarium twice in their undergraduate years as part of class-organized activities: once in their first year, prior to the start of classes; and once in their senior year for "Disorientation." Due to the COVID-19 pandemic, the Class of 2024 did not attend a freshmanyear aquarium trip in 2020; to that end, a junior-year aquarium trip had been a keystone in Class Council President Penny Brant '24's presidential campaign last

Juniors were able to purchase New England Aquarium tickets for themselves and an optional plusone for \$8 - 40% off from regular MIT student price.

Planning for the event began in June, when the council reached out to possible event venues, Brant said in an interview with The Tech. Following a class-wide survey — in which respondents indicated preference for the aquarium over options like a formal or a trip to the Roxy's A4cade — the council began planning logistic specifics. The survey garnered approximately 400 responses, which Brant called "a pretty good sample of the class." She also noted that there was a "big disparity between interest" for the aquarium and other events.

Part of logistical planning included negotiating on the price of the space rental with the aquarium; while the eventual total cost was "around \$30,000 between venue rental and catering," the price had been negotiated down from \$46,000 over a few months.

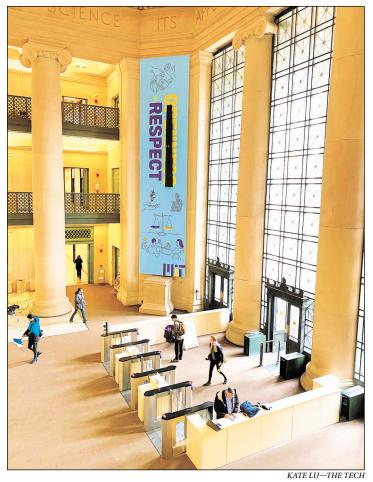
Brant and Class Council Treasurer Paul Irvine '24 also pointed out that the cost of the standard freshman aquarium trip is not borne by the freshman class council. By contrast, Oceantation was paid for by the Class of 2024's budget, adding a layer of complexity to the planning process.

The event itself included catered dinner, a tent outside the aquarium intended for dancing, a polaroid station, a raffle for plushies, and custom postcards featuring artwork submitted by members of the Class of 2024.

While Brant and Irvine were unable to provide an exact number of attendees due to WiFi issues that rendered them unable to manage electronic tickets, Brant mentioned that they had expected "around attendees (with estimates based off of the Class of 2023's Disorientation attendance), and that close to that many students had RSVP-ed.

The Class Council plans to send out a survey soliciting feedback on

Oceantation, Page 2



Students orchestrate a hack on Lobby 7's Openness banner in response to MIT's closed campus policy, Friday.

China Strategy Group releases Engagement with China report The purpose of the report is to 'chart a path for MIT

to conduct' appropriate academic collaborations

By Eva Ge

Associate Provost Richard Lester and Chair of the Faculty Lily Tsai released a report titled University Engagement With China: An MIT Approach in an email to the MIT community Oct. 7.

The report was authored by the MIT China Strategy Group, a group

of MIT experts on U.S.-China relations, formed last year at President L. Rafael Reif's request.

According to Lester and Tsai the co-chairs of the group - the purpose of the report is to "chart a path for MIT to conduct academic interactions and collaborations with individuals and organizations in China in ways that uphold the

core values of the Institute." The report contains an evaluation of the benefits and risks of the U.S.-China academic relationship and specific guidance to people involved in or considering China-related activities.

The report finds that "the inten-

MIT CSG, Page 2



The Z Center celebrates its 20th anniversary by holding an indoor

IN SHORT

First quarter half-term subjects final exams take place until Oct. 21.

The Spring 2023 building switch lottery application is available on the Starrez housing portal until Nov. 2 at 12 p.m.

All students are required to receive flu vaccines before Nov. 18 in order to access buildings and register for Spring 2023 and IAP.

Students may complete and submit the ACHA-NCHA survey, sponsored by the National College Health Assessment (NCHA) and distributed by the American College Health Association (ACHA).

Interested in joining The Tech? Email join@tech.mit.edu.

Send news and tips to news@tech. mit.edu.

Ben Bernanke PhD '79 awarded a share of Nobel Memorial Prize in Economics

the U.S. Federal Reserve, was awarded a share of the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel for 2022 Oct. 10.

Bernanke won the award along with Douglas W. Diamond and Philip H. Dybvig, economics professors at the University of Chicago and Washington University at Saint. Louis, respectively.

According to the Royal Swedish Academy of Sciences, Bernanke, Diamond, and Dybvig were awarded the prize "for research on banks and finan-

Ben Bernanke PhD '79, an cial crises." Bernanke was par- Federal Reserve Board in 2002. economist and former chair of ticularly recognized for his paper Bernanke was the 14th chair of "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression" (1983), published in the American Economic Review.

> Bernanke earned his undergraduate degree from Harvard University before receiving his graduate degree in economics at MIT, where he completed a dissertation on long-term commitments, dynamic optimization, and the business cycle. Bernanke then served as faculty at Stanford University and Princeton University before becoming a member of the U.S.

the Federal Reserve Board from 2006 to 2014.

Bernanke was distinguished senior fellow at the Golub Center for Finance and Policy at the Sloan School of Management in the 2020-21 academic year.

The Nobel Memorial Prize for economic sciences has been awarded to 29 MIT affiliates - 16 faculty and 13 alumni - thus far. Most recently the prize was won by Professor Joshua Angrist in 2021 and Professors Abhijit Banerjee and Esther Duflo PhD '99

— Kristina Chen

CRYPTIC CROSS

With a technological twist. FUN, p. 4

THE TECH IS FOSSIL FUELED

MIT's student newspaper should not run advertisements for dangerous climate criminals. OPINION, p. 6

SHOWING SUPPORT FOR IRANIAN SCHOLARS

History faculty members express solidarity. OPINION, p. 7

COMBATING THE CLIMATE CRISIS

Short description of article. OPINION, p. 7

LOVELY YET LETHAL

A WIZ*One reviews leader Eunbi's latest solo release.

ARTS, p. 8

SECTIONS

Fun					.4
Opinion					.6
Arts					.8

2 THE TECH THURSDAY, OCTOBER 20, 2022

WEATHER

Anything but cloudy

By Amena Khatun

While the Great Lakes region and the tip of Florida will see some rain, Boston will remain sunny with southwesterly winds. Some clouds will roll in this weekend in time for the Head of the Charles. If you did not have time to go to the Arboretum last weekend, don't miss out this weekend on watching the fall regatta and enjoying the vibrantly colored leaves.

This week is momentous for many reasons: MIT D-Lab is celebrating twenty years of creative existence, Venera 9 successfully landed and sent the first images of the surface of Venus in 1975. Alabama hit freezing point before Montana for the first time since 1934, and I completed one year as a Meteorologist for *The Tech*. Also of note, BC's hosting its annual ABC party, a possible moment of respite in the busy bee life of MIT

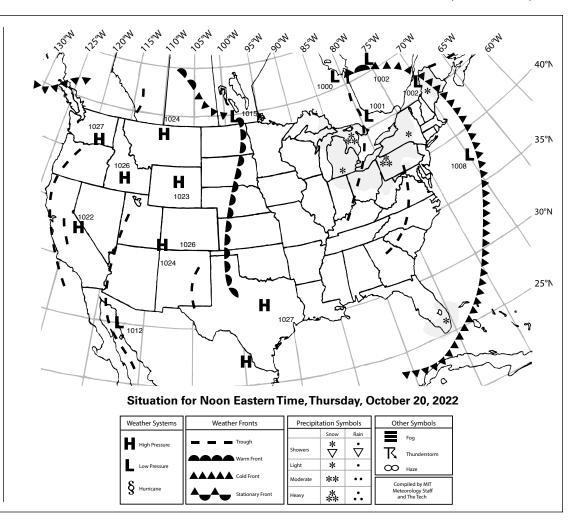
Extended Forecast

Today: Sunny. High around 56°F (13°C). Winds 11-16 mph in the

Tonight: Mostly clear. Low around 43°F (6°C). Winds 7–13 mph. Tomorrow: High around 61°F (16°C) and low around 48°F (9°C). Winds 6-10 in the southwest.

Saturday: Cloudy. High around 67°F (19°C) and low around 49°F (9°C). Winds 7–10mph in the southwest.

Sunday: Mostly cloudy. High around 63°F (17°C) and low around 53°F (12°C). Winds 5–7 mph in the northeast.



Class council will ask attendees about their experiences in a feedback form

Oceantation, from Page 1

various aspects of the event, according to Irvine: in particular, the form will "ask people about their experience at the aquarium, as well as learn how some last minute changes might have affected student experience."

Unforeseen circumstances

Brant shared that "there were some last minute changes that happened at the venue for certain reasons," with Irvine adding that the council was not notified previ-

ously of the changes and therefore "advertised some things" that didn't come to fruition.

For instance, the catering company charged by the aquarium to deliver food "had a labor strike" that resulted in only some of the advertised food being delivered, and an advertised cheese wheel missing. Also, though stingray petting was a planned attraction at the event, "the stingray steward was sick," and the event featured penguins instead.

A Harvard University student and plus-one at the event "got into the fish tank" despite fences, signs, and a security guard surrounding the tank, a penguin steward reported to Brant. Brant stated that the council was talking to MIT's administration about "how to best sort this complicated situation out," that it was a priority to make sure "that everyone. both the student and the fish" were well, and that the administration is "talking to the aquarium about possible actions from here on."

While the council rented out the space from 7-11 p.m., Brant said the aquarium locked gates at 9 p.m. without prior notice; and, some of the exhibit lights were turned off at 9 p.m. "for the fish to sleep" (though the exhibits were still open to everyone).

Event takeaways

Despite the logistical challenges, Brant and Irvine felt positively about the event at its conclusion; Irvine remarked that he spent most of his time taking polaroid photos of attendees and that "it was really cool to see all the friends coming together." Brant reflected on the walk to the aquarium, saying that a highlight of the night for her was staying behind at Kresge to walk over to the venue with "sixty members" of the Class of 2024.

Brant closed by saying "while there may have been many last minute changes, in some way that's representative of us as a class. We've always found a way to thrive even when unexpected changes happen and that's just who we are."

Report includes guidance on talent recruitment, gifts, and travel to China

MIT CSG, from Page 1

sifying geopolitical and strategic rivalry between China and the United States, and concerns over attempts by Chinese interests to gain advantage over the United States by exploiting American university research" has caused the "outlook for academic research collaborations and flows of students and scholars between the U.S. and China" to be uncertain. This is particularly relevant to MIT, as "the U.S.-China rivalry focuses on com-

petition in science and technology", causing pressures in both countries to "erect higher barriers to academic research collaboration and educational exchange, especially in scientific fields."

This statement comes despite MIT's long history of collaboration with China, which "stretch[es] back almost to [MIT's] founding," and the "tremendously valuable contributions [that] students, scholars, and faculty of Chinese origin" have made to the MIT community.

The report recommends an approach which "combines selective engagement with targeted risk assessment and management." Recommendations for this approach include not engaging in "research collaborations that might help foreign governments use advanced technologies against the United States" or "collaborations that might contribute to human rights abuses"; creating resources to help principal investigators (PIs) understand the context of proposed research collaborations with China; providing training to help PIs educate researchers about the standards for sharing information outside the research group; and strengthening internal reporting systems for reports of conflicts of interest.

However, MIT will continue admitting students from China to ensure "the greatest possible access for individuals of great ability, regardless of nationality" and to provide opportunities for MIT students to learn about China's "society, history, culture... to develop practical, hands-on knowledge of Chinese business practices and innovation capabilities."

Further guidance is provided, including details regarding informal collaborations, foreign talent recruitment programs, gifts from Chinese donors, technology licensing, and travel to China.

The MIT China Strategy Group has encouraged the MIT community to submit comments on the report, which will be forwarded to Reif for review.



Students enjoy the fall scenery during a dorm-organized apple-picking event at Honey Pot Hill Orchard, Tuesday.



MIT community members participate in activities such as Shodo, origami, and chess during the Japanese Tsukimi festival, Oct 11.

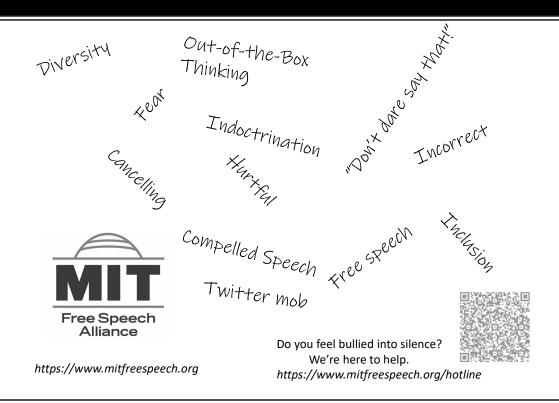
Thursday, October 20, 2022

Say Hello



To My Little Friend.

photo@tech.mit.edu



Which is more important?



- (a) MIT should suppress student and faculty opinions which violate some norm, in order to protect me from being misled or offended.
- (b) MIT should allow all student and faculty opinions to be presented, to allow their advocates to try to make their case and persuade me.



If only a few people hold an opinion, does that mean it's especially important to silence them? Or is it the reverse?

It's hard standing up to bullies. We're here to help. https://www.mitfreespeech.org/hotline

https://www.mitfreespeech.org https://www.mitfreespeech.org

101 THINGS TO DO BEFORE YOU GRADUATE

32. Take a stroll through Little Italy in the North End

Join the Arts department at *The Tech* and write restaurant reviews.

(And get reimbursed for your meal!)

9 6

Solution to Midterms

From page 4

6 4 1 8 3 7 5 2 9

3 9 7 6 2 5 8 1 4

2 5 8 9 4 1 6 7 3

8 6 3 4 7 9 1 5 2

4 7 5 3 1 2 9 6 8

9 1 2 5 8 6 3 4 7

7 2 6 1 9 8 4 3 5

Solution to Snorlax

5 3 9 7 6 4 2 8 1

8 4 2 5 3 7

Solution to Burrito

Solution to Engineered

nom page 4



FUNFUNFUNFUNFUNFUNFUNFUNFUNFUN FUNFUNFUNFUNFUNFUNFU

Midterms

Solution, page 3

				3			2	
		7				8		4
	5		9				7	3
8		3	4			1		2
			3		2			
9		2			6	3		7
9 7	2				8		3	
1		4				7		
	3			6				

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Burrito

Solution, page 3

8				5		7	
3				2 6			
	7	4	1	6	5		
	9		3		2	4	
7							9
	8	2		7		3	
		8	6	3	7	2	
			5				4
	2		8				6

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Engineered Chaos by David Berardo

Solution, page 3

Across

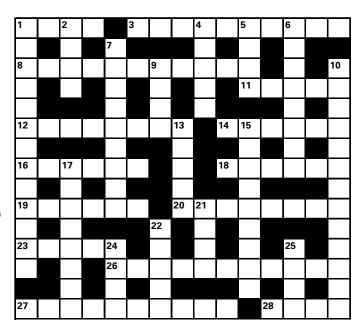
- 1 Vitamin dose contains intellect (4)
- 3 Modern machinery can educate without heart; no kind of science (10)
- 8 Colonel swim was strange angry singing judge (5,6)
- 11 Non-ionic internal allium (5)12 Songbird leading catholic
- 14 Director directive to strip factions (6)
- 16 United Nations intelligence unite ends of individual (6)
- 18 Blur toxic trash after downsizing (6)
- 19 Tower builder heard him describe a tumble (6)
- 20 Passageway is core grid

- missing example and partner (8)
- 23 Tip top song mangled pickers (5)
- 26 Specter rewrote protege list (11)
- 27 Messy bike career was a tension killer (10)
- 28 Solo rebel held head diva's limb (4)

Down

- 1 Tests as much as destroyed state (13)
- 2 Identify center of tooth coating (4)
- 4 Head honcho wearing slippery fish shoes (5)
- 5 Weird solo at Nordic capital
 (4)
- 6 CIA predecessor if it had

- mostly tried to become bone (8)
- 7 Confused inuit test establishment (9)
- 9 Maybe California has a whale? (4)
- 10 Continuous unit erupted while embracing two-thirds of gun club (13)
- 13 Essential psychological rationale (5)
- 15 Town rebuilt red big mac (9)
- 17 Endless verb conjugation lacking old four (8)
- 21 Seep out of uncapped alcoholic beverage (4)
- 22 Tango alternative to chip dip (5)
- 24 Mostly extra box (4)25 Fruit center and a flat bread (4)



A WEBCOMIC OF ROMANCE, SARCASM, MATH, AND LANGUAGE by Randall Munroe

[504] Legal Hacks

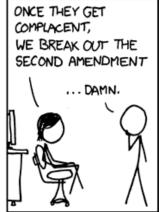


IT WASN'T THAT LONG AGO THAT RSA WAS ILLEGAL TO EXPORT, CLASSIFIED A MUNITION.

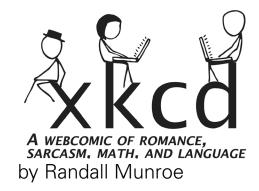


YOU KNOW, I THINK THE CRYPTO COMMUNITY TOOK THE WRONG SIDE IN THAT FIGHT. WE SHOULD'VE LOBBIED TO KEEP IT COUNTED AS WEAPONRY.





[750] Book Burning











Of course, since their cautionary tale was reported in a print newspaper, no one read it.

Snorlax

Solution, page 3

					9	6	8	2
			7	4				
				2	8			
8		6			5	2		7
		1	8		2	4		
2		7	4			5		8
			5	8				
				6	4			
1	5	8	2					



Publisher

Kristina Chen '23

Editor in Chief Wenbo Wu '23

Business Manager

Caroline Bao '23

Managing Editor William Xu '24

Executive Editor Chloe McCreery '23

NEWS STAFF

News Editors: Srinidhi Narayanan '24; Staff: Kylee Carden '23, Eunice Zhang '26; Meteorologists: Trinity Manuelito '23, Phoebe Lin '24.

PRODUCTION STAFF

Editors: Arun Wongpromoon '23, Syd Robinson '25; Associate Editor: Angelina Zheng '25; Staff: Yichi Zhang G, Alexis Huang '24, Katherine L. Pan '24, Grey Sarmiento '24, Pris Wasuwanich '24, Victoria Gao '25, Ellie Montemayor '26, Lindsay Reyes '26.

SCIENCE STAFF

Editor: Laura Schmidt-Hong '23.

ARTS STAFF

Editors: Mindy Long '23, Erika Yang '23; Associate Editor: Anahita Srinivasan '25; Staff: Mureji Fatunde G, Lani Lee G, Vyshnavi Vennelakanti G, Victoria Dzieciol '23, Jamie Fu '23, Nyssa Miller '23.

PHOTOGRAPHY STAFF

Editors: Maximo Machado '23, Cady Boronkay '24; Associate Editor: Maxwell Yun '21; Staff: Stephany Pang '22, Rila Shishido '23, Zoe Pasetsky '24, Farin Tavacoli '24, Amina Abdalla '25, Olivia Lee '25, Kate Lu '25, Alexa-Rae Simao '25, Michelle Xiang '26, Michele Gabriele.

CAMPUS LIFE STAFF

Editor: Paige Bright '24; **Staff:** Vivian Hir '25.

COPY STAFF

Copy Chief: Caitlin Fukumoto '24; Associate Copy Chief: Jyotsna Nair '25; Staff: Michael V. Bhopaul '24, Sabine Chu '26.

BUSINESS STAFF

Advertising Manager: Alvin Chen '25; Operations Manager: Jamil Dellawar '24; Staff: Julia Situ '23, Christina Lee '25.

TECHNOLOGY STAFF

Director: Anirudh Rahul '24.

SOCIAL MEDIA STAFF

Staff: Frankie Schulte '24.

ADVISORY BOARD

Paul E. Schindler, Jr. '74, Barry S. Surman '84, Deborah A. Levinson '91, Saul Blumenthal '98, Daniel Ryan Bersak '02, Eric J. Cholankeril '02, Marissa Vogt '06, Austin Chu '08, Michael McGraw-Herdeg '08, Marie Y. Thibault '08, Angeline Wang '09, Jeff Guo '11, Anne Cai '14, Jessica L. Wass '14, Bruno Faviero '15, Kali Xu '15, Leon Lin '16, Kath Xu '16, Lenny Martinez Dominguez '17, Charlie J. Moore '17, William Navarre '17, Emma Bingham '19, Nafisa Syed '19, Áron Ricardo Perez-Lopez '20, Nathan Liang '21, Joanna Lin '21, B. D. Colen.

EDITORS AT LARGE

Senior Editors: Ben Kettle '22.

PRODUCTION STAFF FOR THIS ISSUE

Editors: Arun Wongprommoon '23, Syd Robinson '25; Staff: Pris Wasuwanich '24, Ellie Montemayor '26, Lindsay Reyes '26, Eunice Zhang '26; Copy Editors: Caitlin Fukumoto '24, Jyotsna Nair '25, Yifan Wang '24, Noura Attili '26, Sabine Chu '26, Geoffrey Enwere '26.

The Tech (ISSN 0148-9607) is published on Thursdays during the academic year (except during MIT vacations) and monthly during the summer by The Tech, Room W20-483, 84 Massachusetts Avenue, Cambridge, Mass. 02139. Subscriptions are \$50.00 per year (third class). POSTMASTER: Please send all address changes to our mailing address: The Tech, P.O. Box 397029, Cambridge, Mass. 02139-7029. TELEPHONE: Editorial: (617) 253-1541. Business: (617) 258-8324. Facsimile: (617) 258-8226. Advertising, subscription, and typesetting rates available. Entire contents © 2022 The Tech. Printed by Graphic Developments, Inc.

GUEST COLUMN

'The Tech' should not advertise for companies jeopardizing humanity's future

Fossil fuels are among the most dangerous products sold today, and that is only becoming more true as the climate crisis accelerates

By Graham Turk

When I opened The Tech's home page a few weeks ago, I was surprised to see a front-page banner ad for Chevron, highlighting their job and internship openings. For those unfamiliar, Chevron is an oil and gas company that traces its roots to Standard Oil. Through its sponsorship of the American Petroleum Institute (API), it has known about anthropogenic global warming since at least the 1960s. The company has repeatedly refused to commit to reducing fossil fuel production in the face of overwhelming scientific evidence that we must rapidly do exactly that. I wondered: why would *The Tech* — a nonprofit student newspaper at an institution whose mission is to best serve the world - run an ad encouraging students to work for a company that is making that same world uninhabitable?

Why would *The Tech* — a nonprofit student newspaper at an institution whose mission is to best serve the world — run an ad encouraging students to work for a company that is making that same world uninhabitable?

I wrote to *The Tech*'s executive board to express this confusion. They explained that they would not print ads advertising dangerous products like cigarettes, diet regimens, or firearms, but that Chevron's products did not meet this bar. They further explained that readers of *The Tech* should be able to use their own judgment to decide whether to apply to work at Chevron. To say

that fossil fuels are not dangerous is to not only deny the existence of a human-caused climate crisis, but also to ignore both the basic reality of the impact of air pollution on the human cardiovascular system, and, in the case of Chevron, the well-documented, devastating health and environmental impacts of their facilities around the world.

I assume *The Tech* understands that pollution poses a danger to human and environmental health and that fossil fuels cause climate change, which is also dangerous. I assume they understand that Chevron extracts, refines, and sells fossil fuels. So maybe there is another reason they refuse to categorize Chevron's primary product as dangerous. My guess is that they believe that fossil fuels — unlike cigarettes or firearms — are an essential product that our society cannot live without, and Chevron is simply responding to market demand.

While it is true that we cannot transition to clean energy overnight, the reason we are not closer to that goal is in large part due to the successful public misinformation and direct lobbying efforts of Chevron and its peers over the past 50 years. While Chevron claims to support international climate agreements and a carbon tax, the company's history as a key funder of API — whose board is currently chaired by Chevron's CEO — tells a very different story. Perhaps most egregious in API's checkered past is its 1998 "Roadmap" created to explicitly sow doubt in settled climate science.

I believe that *The Tech* should review its definition of a "dangerous product" and consider the implicit impact of promoting Chevron job opportunities on its home page. MIT students might not — understandably — be aware of Chevron's history of lobbying against climate action. Even more troubling, students might interpret Chevron's placement on the homepage as an implicit moral endorsement of Chevron's activities, creating the false impression that the company is serious about transitioning away from oil and gas. Chevron's actions and investments indicate otherwise.

The reality is that fossil fuels are among the most dangerous products sold today, and that is only becoming more true as the climate crisis accelerates. There is a relatively tiny number of organizations and individuals benefiting from our continued reliance on fossil fuels and the mass suffering it causes. Chevron is one of these few organizations, and they do not belong in our student newspaper.

I believe that *The Tech* should review its definition of a "dangerous product" and consider the implicit impact of promoting Chevron job opportunities on its home page.

MIT's students are too smart to waste their potential on 20th-century technology. The energy transition needs your talents and passion elsewhere.

The reality is that fossil fuels are among the most dangerous products sold today, and that is only becoming more true as the climate crisis accelerates.

Graham Turk is a first-year master's student in the Technology and Policy Program focusing on energy policy. Students looking for help finding jobs or internships in clean energy can reach him at gturk@mit.edu.

We get you the tickets. You get us the review.

ARTS at Established 1881 events • movies • theater • concerts

music • books • restaurants • interviews

join@the-tech.mit.edu

OPINION POLICY

Editorials are the official opinion of *The Tech*. They are written by the Editorial Board, which consists of Publisher Kristina Chen, Editor in Chief Wenbo Wu, Managing Editor William Xu, Executive Editor Chloe McCreery, and the opinion editor, a position that is currently vacant.

Dissents are the signed opinions of editorial board members choosing to publish their disagreement with the editorial.

Letters to the editor, columns, and editorial cartoons are written by individuals and represent the opinion of the author, not necessarily that of the newspaper. Electronic submissions are encouraged and should be sent to *letters@tech.mit.edu*. Hard copy submissions should be addressed to *The Tech*, P.O. Box 397029, Cambridge, Mass. 02139-7029, or sent by interdepartmental mail to Room W20-483. All submissions are due by noon four (4) calendar days before the date of publication.

Letters, columns, and cartoons must bear the authors' signatures, addresses, and phone numbers. Unsigned letters will not be accepted. *The Tech* reserves the right to edit or condense letters; shorter letters will be given higher priority.

Once submitted, all letters become property of *The Tech*, and will not be returned. Letters, columns, and cartoons may also be posted on *The Tech*'s Web site and/or printed or published in any other format or medium now known or later that becomes known. *The Tech* makes no commitment to publish all the letters received.

 $\begin{tabular}{ll} \textbf{Guest columns} & are opinion articles submitted by members of the MIT or local community. \end{tabular}$

TO REACH US

The Tech's telephone number is (617) 253-1541. Email is the easiest way to reach any member of our staff. If you are unsure whom to contact, send mail to <code>general@tech.mit.edu</code>, and it will be directed to the appropriate person. You can reach the editor in chief by emailing <code>eic@tech.mit.edu</code>. Please send press releases, requests for coverage, and information about errors that call for correction to <code>news@tech.mit.edu</code>. Letters to the editor should be sent to <code>letters@tech.mit.edu</code>. The Tech can be found on the World Wide Web at <code>http://thetech.com</code>.

GUEST COLUMN

How MIT could more effectively combat global warming

MIT should invest in research on climate engineering and removing CO2 directly

By Tom Hafer and Henry I. Miller

As alumni, we receive numerous communications from MIT. Many of these tout research projects that purport to combat global warming, and most of them target the reduction of CO2 output through projects related to renewable energy and vehicle electrification.

These efforts are well-intentioned but ineffective. MIT's own interactive climate model, En-ROADS, shows that even with maximal worldwide adoption of wind turbines, solar panels, and electric cars, the temperature rise would be abated by only about 0.3°C and that temperatures at the end of the century (i.e. 80 years from now, when most of today's students will already be dead) will still be higher than they are now. And if the interventions are limited to America and a few other Western nations, the decrease in expected warming will be even less — essentially negligible. This is a scant payoff for all the time, money, and brainpower that is being invested.

MIT could have a larger and more immediate impact by providing strong support for research in two areas. The first area is direct CO2 removal and sequestration. This is done by drawing in air through giant fans,

OPEN LETTER

MIT history faculty members issue statement of solidarity with Iran's Sharif University of Technology

The members of the history faculty at the Massachusetts Institute of Technology (MIT) listed below write to express our unwavering solidarity with the students and professors at Iran's Sharif University of Technology and condemn in the strongest possible terms the Iranian government's violent raid on our counterparts at Sharif. We watch the footage of the government's crackdown in anger, frustration, and

Universities are places for intellectual exchange, open discussion, and rigorous

chemically removing the CO2, and storing it underground. This is currently being done on a small scale at an operating plant in Iceland that removes 4,000 tons of CO2 per year. This demonstrates feasibility but would have to be scaled up dramatically to make a dent in the 36 billion tons of CO2 emitted worldwide each year. But direct CO2 removal is one of the few ways that we can actually reduce the amount of CO2 in the atmosphere. When more CO2 is removed than is generated, temperatures will begin to fall.

MIT could have a larger and more immediate impact by providing strong support for research in two areas.

The second possibility is climate engineering. This would be a purposeful effort to mimic the effects of volcanoes. Large volcanic eruptions put into the upper atmosphere millions of tons of ash and sulfur dioxide that partially block sunlight from reaching the earth and thereby produce an immediate cooling effect. The Mount Pinatubo eruption in 1991 resulted in a substantial cooling

debate; they are the last places security forces should be found — let alone found attacking students and professors.

We at MIT have a decades-long connection with Sharif, as MIT played a role in its inception. Furthermore, MIT has a long history with Iran's best and brightest at Sharif, many of whom have graduated from that esteemed institution and have come to MIT to further their education while simultaneously enriching our diverse student community. Many of our current graduate Iranian students and faculty hail from Sharif University; we also express our solidarity and heartfelt support for the entire MIT Iranian community who watch helplessly as the Iranian government's brutality is unleashed upon their peers, friends, family, neighbors, and fellow citizens. We see you. You have our support and our empathy.

We recognize that the government's assault on Sharif is part of a wider crackdown on dissent in the country after Mahsa Amini's death sparked nationwide protests. The 22-year-old died in the Iranian government's custody after the morality police

effect for the next couple of years. And the Tambora eruption in 1815 caused snow to fall in Virginia on the Fourth of July in 1816.

Both of these approaches require significant research and development. The cost of direct CO2 removal must decrease by well over 90% to be affordable. But this is comparable to the achieved cost reduction of solar panels over the last 30 years.

The cost of direct CO2 removal must decrease by well over 90% to be affordable.

Climate engineering requires even more study. How do we do it effectively, and how could we measure and minimize any adverse effects of releasing chemicals into the atmosphere? It doesn't have to be done all at once: the approach could be to try a little, measure the effects, and make whatever modifications are needed. Whatever downsides there are must be weighed against the downsides of doing nothing — or at least nothing effective.

Spending hundreds of billions of dollars on wind turbines, solar panels, and electric cars will make no perceptible difference in

detained her for wearing her head covering "inappropriately."

MIT is a U.S.-based institution, and some may see this statement as violating another nation's sovereignty, especially in the context of U.S. and Iran acrimonies and the extensive history of foreign intervention in Iran throughout much of the modern period. To be clear, this statement is not a call for any such intervention; we respect all nations' sovereignty. As a global institution, however, what fate befalls people elsewhere impacts us here at MIT as well. We affirm the words of the venerated 13th-century Persian poet, Sa'adi:

"Human beings are body parts of each other.

In creation they are indeed of one essence. If a body part is afflicted with pain, Other body parts uneasy will remain. If you have no sympathy for human pain, The name of human you shall not retain."

We are also reminded of the timeless words of Dr. Mohammad Mossadeq, "If I sit silently, I have sinned," reiterate our unequivocal condemnation of the Iranian government's raid on Sharif University of global warming during our lifetimes. Would an intense and highly focused research and development program on direct CO2 removal and climate engineering not be a better investment of resources? These measures do not require worldwide cooperation and could be effectively implemented by the U.S. and our allies acting alone.

Whatever downsides there are must be weighed against the downsides of doing nothing — or at least nothing effective.

The Apollo Project was announced in 1961, and eight years later, men stood on the moon. Could CO2 sequestration and climate engineering produce global cooling in our lifetimes? If you believe in science and can do the math, it's possible.

Tom Hafer '70 Electrical Engineering and Computer Science

> Henry Miller '69 Biology

Technology and the nationwide crack-down on peaceful dissent, and expressly support Iran's student community as well as peaceful protest. We call on the Iranian government to withdraw all security forces from any and all campuses, release all detained students, faculty, and protesters immediately, and urge the government not to stand in the way of peaceful political expression.

Sana Aiyar
Pouya Alimagham
Megan A. Black
William Broadhead
Tristan Brown
Catherine Clark
Lerna Ekmekçioğlu
Alexander Forte
Malick W. Ghachem
Anne McCants
Kenda Mutongi
Hiromu Nagahara
Jeffrey Ravel
Elizabeth Wood

The authors of this piece, listed above, are faculty members in the MIT's History Department.

It's Dangerous to Go Alone! Take This. photo@tech.mit.edu

ALBUM REVIEW

IZ*One Spotlight: *Lethality* by Kwon Eunbi

Kwon's third mini album is a strong addition to her solo discography.

By Eunice Zhang

When I heard of Kwon Eunbi's October comeback, I instantly put the release date on my calendar. Kwon was leader of the former South Korean and Japanese girl band IZ*One, my favorite K-pop group of all time.

Oct. 29 is IZ*One's four year anniversary, so I wanted to highlight their past and current accomplishments in a brief series, beginning with an album review of IZ*One's former leader Kwon Eunbi's third solo mini album Lethality; followed by a commemorative look back at IZ*One's career; and concluding with an album review of soloist and former IZ*One member Jo Yuri's upcoming release Op. 22 Y-Waltz: in

As the saying goes, once a WIZ*One, forever a WIZ*One.

Kwon had already started to develop her own soundscape with two mini albums OPEN, released Aug. 24, 2021, and Color, released Apr. 4, 2022. OPEN's title track "Door" featured a jazzy atmosphere, with the music video (MV) balancing playful exploration with sparkle and glamor.

Color offered a new perspective with title track "Glitch," a futuristic track that kept listeners on the edge throughout with numerous buildups and beat drops. I would recommend giving Kwon's previous title tracks a listen, if not the entire EPs.

Kwon's musical tone - bold and playful while incorporating new ideas with each release - made me excited to listen to Lethality and see what artistry she had to show her fans. And as always, our queen did not disappoint.

WAVE ★★★☆

Standing at only 1 minute and 27 seconds long, "WAVE" was basically what I expected: most K-pop albums begin with a brief, primarily instrumental-based forward. "WAVE" was exactly that: it began with the sound of ocean waves, before transitioning into a drum-like rhythm and a bit of snazzy electric guitar. A solid introduction, but not something I would likely listen to outside the context of her entire mini

UNDERWATER ★★★★★

Out of the five non-instrumental album tracks, "Underwater" is actually the shortest at 2 minutes and 50 seconds. However, don't be fooled by its length — brevity is the wit of the soul.

As soon as the words "Come in, babe," were uttered. I was entranced. The pre-chorus sets the mood for the song: mystical, almost as if we are quite literally underwater in some sort of deep ocean lair with Kwon

The versatility of her voice never fails to shock me, as the light and entrancing tone of the pre-chorus soon transforms to demand much more attention. The chorus begins with the lyrics: "홀려가듯 내 목소 린 널 휩쓸어 (As if bewitched, my voice sweeps you away) / 심해 속 밑 바닥까지 끌어당겨 (Pull it to the bottom of the deep

The powerful chorus, coupled with the fully ramped-up beat, truly swept me away into the deep sea of Kwon Eunbi. Furthermore, the track's shorter length actually served it well, with each part of the song - introduction, build-up, chorus, and the quieter, mystical ending — fitting together in a seamless auditory experience.

From the mermaid-esque undertones in the MV to Kwon's characteristic strong vocals and lack of stagnant verses, I finished "Underwater" feeling as though I'd been submerged in a new experience.

CROQUIS ★★★★★

While I thought the title track had already blown me out of the water, I was NOT prepared at all for the absolute experience that was "Croquis."

While "Underwater" was a more intense song, Kwon demonstrated her vocal range with a light and feathery tone. Croquis means "to sketch" in French, and the lyrics reflect this as Kwon states she'll "redraw" and "sketch" to capture the feeling of her partner.

The chorus featured an extremely catchy repetition of the phrase "my love," and I can already see myself warbling it at random points because it's that good. The slow buildup to the ending, which featured Kwon's glorious high notes, made me feel at peace by the end of the song.

Later whilst browsing Twitter, I learned that the outro of "Glitch" actually held an easter egg for "Croquis." If you listen to the two, they bridge together seamlessly.

The electropop tones, catchy repetition, and slightly eerie energy of this track make it a beautiful track that perfectly emulates Kwon's strongest appeal as an artist: her musical versatility provides an indelible intrigue for listeners.

SIMULATION ★★★★☆

As I approached the later half of the album, the vibe transitioned towards less intense energy. Similar to the two previous songs, "Simulation" features a romantic lyrical message: the listener wants Kwon to be by their side.

While "Simulation" seems like a generic romance song, its strengths are the funky background beat and Kwon's amazing voice. The name of the song was demonstrated by the interesting simulation-like audio warping of the beat. Kwon's strong belting in the chorus turned this otherwise unexciting song into an enjoyable ride.

FLASH ★★★☆☆

Flash had some of the same jazzy elements as Kwon's first title track "Door" (along with nice piano), albeit with a much more relaxed vibe. The song gives "chill grocery store" energy, but similar to "Simulation," it wasn't particularly memorable.

The song seemed to fly by as I listened to it, which could be an asset (for example, when doing semi-mindless 5.111 online pset questions.) For that, "Flash" deserves its solid 3/5 rating.

HI ★★★★☆

Perhaps reading the songs' translations biased my opinion against the latter half of this album, because I realized they typically centered around a broad romance theme. "Hi" follows the same track, though it has a more preppy high-school energy with its upbeat nature and references to Instagram. Kwon was also involved in crafting the lyrics and composition of this

The track is poppy and uplifting, which may also stem from songwriter Melanie

★★★☆ Lethality (EP) By Kwon Eunbi **Woollim Entertainment** Released Oct. 12, 2022

Fontana's influence (she also worked on Boy With Luv by BTS & Halsey). As someone who typically prefers either very energetic music or soulful ballads in K-pop, I found "Hi" a nice way to add energy and conclude Kwon's third mini album on a cheerful note.

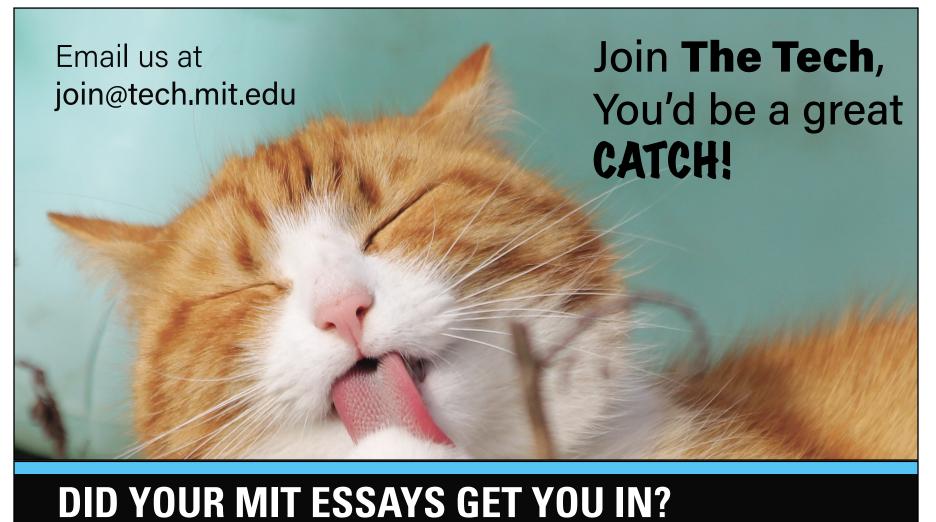
Kwon's versatility as an artist shined through the diversity of the tracklist, from "Flash" — a subdued and lighthearted song to the title track "Underwater," a mesmerizing and mystical experience.

Kwon had certainly demonstrated her dynamic behavior as a member of IZ*One, a group that initially had a lighter or more innocent image with "La Vie En Rose," "Violeta," and "Fiesta" before transitioning into a more mature sound with "Secret Story of the Swan (SSOTS)" and "Panorama." However, as a solo artist, Kwon nails more futuristic concepts like in "Glitch" and "Croquis."

Highlights of the album were "Croquis" and the title track. The rest of the album was good, but not nearly as breathtaking as those two — which were truly emblematic of the mini album's title Lethality.

Furthermore, I felt a lack of lyrical diversity, as the songs were all centered around some romantic experience. However, the metaphors of being "submerged" in "Underwater" and "sketching" in "Croquis" were a creative touch.

Lethality is another great release by Kwon, further solidifying her status as one of this generation's top K-pop solo artists. I recommend the mini album to anyone interested in a mature and electro-glitchesque sound ("Underwater," "Croquis," "Simulation"). "Flash" and "Hi" serve as lighter and cheerier counterparts to the first three songs, rounding out Kwon's third EP in a satisfying manner.



The Tech is collecting successful application essays (hint: yours!). Email your pieces to cl@tech.mit.edu!