

Spring 2020

Marshall Alumni Newsletter



Health and Medicine

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Views represented in this newsletter are those of the authors and do not necessarily represent the views of the AMS or the Marshall Aid Commemoration Commission (MACC).

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It was a complete coincidence that we planned to deliver an issue of the Marshall newsletter on Health and Medicine in the same year that COVID-19 broke out. The issue was already in production and we unfortunately could not include any article specifically about the disease. However, a few of our profiles have short updates that describe Marshall involvement with the current crisis. This issue features Marshalls working in medicine, public policy, economics, fitness, all related to the health of the human body. We have an “Arts Corner” with profiles and contributions from Scholars in the humanities. As I write this paragraph, many of us are in some kind of isolation or quarantine. I would like to dedicate the next Fall issue of the newsletter to Travel and Location, just to remind ourselves of places in the world that we can visit when it is safer to do so. If you have lived or traveled in comparatively unknown or unvisited locations, please let us know. Tell us something about the place, the people, the material culture, and of course include many pictures. Lastly, I would like to thank Ushma Neill for her many years of service on the Newsletter, as she makes time in her schedule to pursue other ventures; you can read about her activities in the Class Notes section. As usual, comments and suggestions from our readers are always welcome. We on the staff of the Marshall Newsletter wish everyone well and hope that you all stay safe.

Stanley Chang ('91)
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Update from the AMS Executive Director

Nell Breyer

Through the generosity of alumni, the AMS has recently begun two new initiatives which aim to strengthen the Marshall Scholarship experience and US-UK ties. Here is a snapshot of each:

In 2018, with the support of alumni, the AMS established a “Marshall Xtra” grant in the amount of 1,000 GBP given to each currently enrolled Scholar. The purpose of the grant is to support Marshalls in their ability to deepen their experience of British life and culture during their Marshall Scholarship program years.

The Marshall Xtra was developed with a three-year initial runway of secured funding. The year 2020 will be the third year of the grant. Current Scholars and Marshall Commissioners have

shared positive, qualitative feedback about the impact of Marshall Xtra and described the broad range of experiences and enrichment that it has facilitated. The grant offering has been assessed as successful in its aim to support Scholar-driven exploration and expanded engagement in the United Kingdom. The AMS is now actively seeking support to extend and sustain the program.



“Based in Manchester, I wanted to see the other cities in northern England and explore the hills and dales of the north’s national parks.”

- Porter Nenon (2018)

“I followed in Jane Austen’s footsteps in Bath, sampled vegetarian haggis in Edinburgh, braved a hailstorm to walk the site of the battle of Hastings, and stood awestruck in the cathedral at Salisbury.”

- Elizabeth Keto (2018)

“I’m extremely passionate about the democratization of science, including communication and outreach, and the Marshall Xtra funding supported me greatly in these endeavors as I traveled to organize public engagement events alongside scientific researchers, social scientists, artists, and designers across the UK, all of whom were engaging with science from diverse angles.”

- Pradnya Narkhede (2018)

“The second program in which I have been participating is the inaugural Young Composer Scheme of the National Youth Choirs of Great Britain. This has been a fantastic program with so many different opportunities attached: we’ve had the chance to record at Abbey Road Studios, write music in Benjamin Britten’s former estate in Aldeburgh, present in the Royal Albert Hall, visit the music publishers at Oxford University Press, chat in a small setting with composers like Jonathan Dove, Roxanna Panufnik, Benji Merrison, and Alexandra Harwood, and, just this past week, have a one-on-one lesson with Anna Meredith in her private studio at Somerset House. Having the stipend has allowed me to be fully committed to the program without having to work a part-time job to support all of these endeavors!”

- Shruthi Rajasekar (2018)

“The Marshall Xtra gave me the financial freedom to attend multiple conferences in condensed matter physics.”

- Derek Wang (2018)



“Taking three days just to walk to King Arthur’s Seat, the Pentland Hills, and Edinburgh old town was absolutely incredible. Not only was it a much-needed break after finishing my dissertation, it made me fall in love with Scotland, a place that I wouldn’t have visited otherwise. My mind is brimming with story ideas and settings for future novels inspired by Scotland’s absurd beauty.”

- Rebecca Kuang (2018)



"I was able to explore London's extraordinary culinary scene and attend events like Rugby at Twickenham, the first MLB games held overseas, and the Royal Ascot."

- Jackson Neagli (2018)



"I saw the beautiful countryside (including the Highland cattle) and was able to meet with the farm manager of Ballindalloch castle. There I learned more about agriculture in the UK and the estate's herd of cattle, which is the oldest herd of Aberdeen Angus in the world. Since rural policy is my area of focus, being able to see how many of the issues are common to both the US and the UK has been one of the most interesting connections to home I have felt since being here."

- Victoria Maloch (2018)



William Henagan (2018), Oxford Matriculation



Joani Etskovitz (2018), Tea & Ovaltine

At the end of 2019, the AMS launched its pilot *US UK Legislative Exchange*, conducted in partnership with Chatham House and Hudson Institute, with the goal of deepening US-UK ties and mutual transatlantic understanding.

The *US UK Legislative Exchange* supports bipartisan and multi-party dialogue between members of the US Congress and members of the UK government (including members of Parliament). The program includes a series of educational seminars and expert briefings with Marshalls and other leaders in

academia and the private sector, in order to facilitate discussion and shared understanding across a range of issues of critical concern to both countries. The program has a purely educational purpose, does not promote a partisan or political agenda, and is intended to continue to foster US-UK understanding, an objective underpinning the Marshall Scholarship.

The pilot US UK Legislative Exchange took place in Oxford and in London on December 13-16, 2019. It included participation by current Marshall Scholars, alumni, Board members and



The view from Cotehele, a National Trust property in Cornwall, across the river into Devon



"I made it back to Cambridge just in time for my graduation from Part III Applied Mathematics with Zach Hulcher (middle) and Dan Kinch (right), two of my fellow Marshalls in the same program. Thank you again for the wonderful opportunity to travel around the UK prior to my departure. It was the highlight of the last two years and an experience that I will never forget!"

- Matthew Hurst (2018)

Commissioners of the Marshall Aid Commemoration Committee, journalists, and members of the United States Congress and the British Parliament. The program included round-table discussions, meetings, and briefs by private sector leaders and practitioners, such as Ambassador Peter Westmacott; David Schwimmer, CEO of the London Stock Exchange Group; and George Osborne, former Chancellor of the Exchequer and current Editor of the London Evening Standard.

On the first day of the new British Government, through facilitation by the AMS, the members of Congress were also able to meet with leadership in the British Foreign and Commonwealth Offices, the Ministry of Defence, the Secretary of State for Health and Social Care, and the Secretary of State for International Trade.

The AMS will continue to develop the US UK Legislative Exchanges in the upcoming months, recognizing that US-UK ties will be of renewed importance and that the Marshall Scholarship, its alumni community, and their expertise represent a unique resource through which the two countries can continue to advance scholarship, human knowledge, and mutual understanding.

Over the next six months, the AMS is laying the foundation for a significant fundraising campaign to help ensure fulfillment of its mission to strengthen the Marshall Scholarship and US-UK ties with the help and engagement of the Scholarship's extraordinary alumni around the globe. We welcome your ideas and participation in our efforts to strengthen the Scholarship experience and the values upon which it is based.

We are so grateful to all of our alumni volunteers and, in particular, to the AMS Newsletter writers and editors for their time and service. We hope you will enjoy this current issue on health and medicine.

Thank you for supporting the AMS.

ASSOCIATION OF
MARSHALL
SCHOLARS



REACHING OUT

Encouraging Diversity in the Marshall Scholarship

By Andrew Hordern, British Consulate General, New York

One of my favorite activities each year is coordinating the Marshall Scholarship for the New York region. Each segment of the process is fascinating. I spend my time listening to our wonderful volunteer committee as they deliberate on which candidates should progress, meeting the 24 future US leaders who come to the Consulate for the interview stage, and hearing cries of happiness as candidates are awarded the Scholarship. This wonderful experience fills me with hope for the future.

While it is tremendous fun being involved in the awarding of the Scholarships, an important stage of the process takes place many months before. Together with my excellent Committee Chair Diane Flynn, we need to answer the question: “How do we create a more level playing field for the Marshall Scholarship?”

The playing field imbalance comes from the different resources available to students applying for the Scholarships. Some universities regularly do well at the Marshall Scholarship, gaining interviews and scholarships at least every few years. Students at these universities are inspired to apply for the Marshall Scholarship from the previous winners, and the universities have strong institutional knowledge of the scholarship processes. This helps the applicants when they write applications or attend interviews.

At the other end of the spectrum, there are universities which have never won a Marshall Scholarship, or have not won a Scholarship for a long time. Students may be unaware of the Marshall Scholarship program, or think that someone like them could not win the award. If they do apply, students will suffer from a gap in the institutional knowledge on the Scholarship, which makes it harder for the candidate to put together a strong application or prepare effectively for the interview.

To help bring the two ends of the spectrum closer together, Chair Diane Flynn and I began by holding presentations at university campuses and student conferences to speak directly to both potential scholars and their advisors. This is the most direct way of engaging with students, but is limited in terms of our available time and resources. While Diane has made a Herculean effort to speak to as many university students as possible, some remote-located universities were not hearing about the program.

Diane and I decided to supplement our presentation outreach program by holding an annual teleconference. We invited



university advisors and prospective candidates to listen in to learn about the Marshall Scholarship and ask any questions on the selection process. This was done so that every university had the opportunity to develop its own institutional knowledge of the Marshall Scholarship. This teleconference has proven popular and has grown rapidly. In its inaugural year, 2018, a total of 32 distinct universities from the New York region attended the teleconference. In 2019, approximately 70 distinct eastern US universities attended the call, at which Marshall alumni Emily Rutherford and Mari Oye provided insights into why they applied for the Scholarship and what it is like to be a Marshall Scholar. (Website Link to the Teleconferences: <https://www.marshallscholarship.org/the-scholarship/outreach>)

Outreach Impact

The New York Region’s outreach efforts have boosted the number of applications it has received from diverse public

universities. Between 2010 and 2019, public universities would send around 30 applications into the New York region per year. Thanks to the public outreach efforts, the number of public university applications jumped to 51 in 2020, an impressive result in a year where total Marshall Scholarship applications across the US mildly declined.

More public university applications have led to more public university Marshall Scholarship winners. There have been three New York Public University Scholars from the New York region in the past two scholarship cycles. They are:



Source: Marshall Scholarship Website

Gabriella Cook-Francis, 2019

Second-ever Marshall Scholar from Hunter College, CUNY, attending the University of Oxford, pursuing an MPhil in Comparative Government.

Diego Alejandro Atehortúa, 2020

First-ever Marshall Scholar from Rutgers University, attending the University of Cambridge pursuing an MPhil in Latin American Studies.

Claire Garfield, 2020

Second-ever Marshall Scholar from SUNY Stony Brook, first-ever Marshall Scholar to attend the University of Highlands and Islands, pursuing an MRes Algal Biotechnology, Biology and Ecology.

Future efforts

We are looking forward to build on our outreach efforts for the 2021 Marshall Scholarship cycle. At the time of writing, we are planning a nationwide outreach teleconference, where we hope to engage more universities than ever.

We are also coming up with new ways to engage prospective students. Late last year, Diane and I had starring roles in a Marshall Scholarship YouTube video, where we described the processes of a Marshall Scholarship interview. Diane and I are scheming about further videos for the coming year.

Overall, the British Consulate New York looks forward to furthering its Marshall Scholarship work to build relations between the UK and a diverse selection of scholars from the US.

Would you like to help the British Consulate New York with the Marshall Scholarship process? We are always on the lookout for volunteers for our Reading Committee. Contact andrew.hordern@fco.gov.uk if interested.



Gabriella Cook-Francis, 2019



Diego Alejandro Atehortúa, 2020



Claire Garfield, 2020

Down on the Farm, Up on Health

By Julie Sikkink Lee ('88)

On July 22nd, 2019, Marshall alumna Anne Applebaum ('86) was finishing a *Washington Post* column on Boris Johnson and Brexit. Marshall alumnus Derek Kilmer ('96) was introducing a bi-partisan economic mobility bill in Congress. Marshall alumnus Neil Gorsuch ('92) was teaching a two-week course at the Scalia Institute in Padua, Italy, during the Supreme Court's summer recess. And I was chasing an escaped dairy cow down the Banks-Vernonia Trail through our family farm in Western Oregon. Each of us was using our Marshall-supported education to good effect that day, although the relevance of my work likely requires more explanation.

When not milking, collecting eggs, or running a farmer's market, I employ my British education (BA in Medieval and Modern History, University College London, 1990) and my extensive time in UK libraries, historical and natural sites, and theaters in a more direct manner, as a high school English and history teacher at Oregon Episcopal School in Portland. But my work with Wingham Farms, our family's 140-acre pastured-animal farm, is also well served by the critical thinking, research, and communication skills I gained through my British degree. Likewise my contact with British life, particularly culinary and natural history, has been invaluable to my leadership role in guiding our farm's choices and facilitating our customers' awareness of the health and environmental impacts of their food choices, including learning new (usually *good old*) ways to prepare the kind of foods we raise.

I returned from the UK in 1990 newly married to a British man, Daniel Lee, who had worked on farms in summers since his teen years and had a dream to run his own someday. We started Wingham Farms in 2013 when we couldn't find local sources for the healthy foods we wanted for managing his rising blood pressure and my family history of high cholesterol. Why was our local natural food store not selling grass-finished meat? Why was the only grass-fed lamb being imported all the way from New Zealand, although farmers raise sheep on wonderful pastures in Oregon's Willamette Valley? Why were all the commercial egg producers desperate to keep anyone from seeing inside their operations? Why was raw milk such a "dirty secret" that farmers providing it in Oregon weren't even allowed to advertise? Both my husband and I have some farming background and trusted that experience to support us as we took the leap and built up a pasture-based dairy, meat, and egg production from scratch on a former arable farm 27 miles west of Portland. While the stories of our greenhorn mistakes and the adventures of our James Herriot-worthy (and oft-escaping) animals are probably the most fun to tell, this issue is dedicated to the theme of health, so I will focus on introducing Marshall alums to some of the health concerns Daniel and I seek to address with our farming endeavors, in hopes of recruiting some research and policy partners in the bargain.

Farming has acquired an unfair label as a job that takes brawn rather than brains, but I would dare my Marshall colleagues to find their way through the maze of its challenges: humane animal husbandry of smart critters who can escape the most secure-seeming fencing, the repair of second-hand tractors and balers, the calculation of seed-broadcasting ratios, and effective response to the floods, heat waves, and rising fire risk of a changing climate. But because of our contemporary economy and popular culture, and despite scholarly efforts, artisanal farmers are perhaps most challenged in helping potential customers understand why a premium price is worth paying for our produce and what they can reasonably hope to gain for their well-being from purchasing it.

We particularly fight the misleading vocabulary and allure of food advertising, from trying to explain that "cage-free organic" doesn't mean that chickens go outdoors or even have space to move, to questioning internet fads such as \$20/



Image credit: juliaop/bjstock.com





gallon A2 Jersey milk (promoted by the company that sells the test for the gene). We explain that *our* cows actually are out on pasture every day, whereas Tillamook dairy cows mostly are fed commercial feed indoors, despite what cute pictures suggest. We challenge our customers to eat less meat but consume more parts of the animal, which means dissuading media-nurtured steak habits and offering detailed recipes for traditional dishes (read: chewy cuts) using methods such as braising. The most reached-for cookbooks on my current kitchen shelf are the ones I've collected in the British Isles, from Elizabeth's Ayrton's *The Cookery of England* (with its medieval through Victorian recipes, including a rich section on offal), through Darina Allen's *Forgotten Skills of Cooking* (sharing traditional Irish foodways), to my wedding-present British *Good Housekeeping Cookery* book with its classic dishes like steak and kidney pudding. I have even leaned on the wisdom of King Richard II's cook (as translated by Lorna Sass in *To The King's Taste*) to learn how to roast our grass-fed goose, which is too lean to be cooked with modern recipes. We are discovering that we have much to learn from the ways our British forebears farmed and cooked, ate and lived on the land.

The paradox we face, as direct sellers of natural food, is that people are more interested than ever in the relationship between diet and health, yet much less connected to their food's origins. More food is highly processed and shipped from around the world, fewer people know how to cook, and the Internet propagates myths and fads around diets, food safety, and environmental consequences. In high school I was a proud Home Economics geek, serving as a State and National officer of the Future Homemakers of America (now FCCLA), an important source of leadership education that likely contributed to my selection as a Marshall Scholar. Because of budget cuts and soaring curriculum demands, far fewer US schools teach Home Economics today. And yet its need is great for helping young people understand subjects like food's nutritional components and how to prepare healthy dishes. We are fighting a battle against obesity in the west, and the number-one enemy is highly processed food. The soldier in that battle is the cook, and the artisanal farmer is a key ally. At our farm markets we regularly work to persuade busy, suburban people to tackle cooking their own food, with ingredients whose origins they know, rather than relying on packaged "solutions" that are dubious and expensive. Unexpectedly I have returned to leadership in Home Economics.

But before some people will dig out the crock pot, they first need to be persuaded to abandon beguiling food myths. Perhaps because our farm is working toward raising food in more natural ways, people seek us out in hopes of natural food cures, putting us on the front line of explaining that there's really no such thing: clarifying that celery-cured "natural" bacon isn't free of nitrates and nitrites (and probably has much *more* than traditional bacon), while "grass-fed USA beef" has a high chance of being raised in China on silage or grass-seed chaff. We point out that organic milk is not very nutritious if it has been ultra-pasteurized (which most of it has — read your labels!) and explain that, like the British, we don't wash eggs because they can be kept unwashed at room temperature and last longer. We pop easy-street dreams daily by pointing out how little evidence exists that probiotic pills or powders can even survive into the gut. The best people can do is to focus on prebiotics, the predominantly plant foods that feed the gut bacteria we already have.

Instead of questing for the grail of magic health pills, we all simply need to eat food that is closer to its origins, which for many people means (re)learning to shop and cook. Instead of putting powdered collagen in one's coffee or breakfast cereal, an expensive and culinarily questionable strategy (and no, I did *not* make that up), why not learn to make broth with real (much cheaper) bones and eat tasty homemade soup for lunch? Feel free to buy an instant pot if it makes the task feel easier, but a crock pot or an oven on low will work. In order to encourage our customers and the next generation to understand and manage healthier food, I have started offering cooking classes on preserving foods that are natural sources of probiotics, like kefir, raw-milk cheeses, kombucha, sour-dough, and kimchee. These foods aren't magic pills either, but there is some hope that a small amount of their natural probiotics will, if consumed over time, make it through the stomach juices to our intestinal tract, where they may be useful for healing some gut disorders. And for individuals, learning how to nurture a live food is an appealing entry-point to caring more about our food sources and wanting to learn more about food and health.

The lack of quick fixes doesn't mean that there is no connection between natural food and health. There is just no easy solution, and we don't often (yet) have the data to underpin our customers' hunches that consuming our pastured-animal





products makes them feel healthier. (And yes, I know that a well-managed vegetarian diet is even more healthy. Please know, vegetarians and vegans, that I'm not arguing against your choices; I am speaking to my customer base, those who want to eat animal products in a healthy and ethical manner.) There is promising evidence on the healthfulness of pastured beef and eggs, but more research is needed, especially on broad foragers like our Lamancha goats or our English-heritage Tamworth pigs. Unfortunately, the FDA and the land-grant universities (historically connected with large-scale commercial agriculture and invested in the status quo) haven't shown great interest in researching artisanal foods, especially in comparison/contrast studies. Would anyone want to send research students our way?

Raw milk (which we make available by boarding the Jerseys owned by our herd-share customers) also has been stigmatized for so long that there are almost no studies to say if it has health benefits or is more digestible. Ironically, when cannabis was fully legalized in Oregon in 2015, the drug dealers left the parking lots to move into store-fronts while I continue to meet our Portland-area herd-share customers in a parking lot to hand off their bottles. Even if we could afford a store-front space, likely no one would rent to us because people inaccurately see raw milk as a grave health threat, although leafy greens and eggs consistently top the lists of products most likely to cause food poisoning. We persist in the face of stigma because so many customers tell us that they can drink raw milk when they haven't been able to consume pasteurized milk for years, or say that they know their gut health or disease-resistance has improved since starting to consume it. We can't make any claims about these anecdotes, but they are crying out for research. The same research gap exists for so many food-health subjects, like the suggestive links between diet and mental health, probiotics and disease resistance, and heart-health associations with dairy fat, grass-fed dairy especially. My PhD-scientist husband would love to have some allies work with him to explore the health benefits of artisanal foods, or bust a few more myths, if that's the case. Our produce tastes good enough that we aren't in danger of losing our customer base if they know the truth about it.

The purity of our farm products seems to be the specific solution for some of our customers. We do not use pesticides,

antibiotics, insecticides or herbicides, hormones, pasteurization, soy or corn. Certainly our rule against routine antibiotics is valuable in protecting our customers from superbugs, which a recent study found to be present in as much as 75% of grocery-store meat. We aim to give our animals a diet closest to what each species would eat in nature, largely by *letting* them eat in nature, on pasture 365 days a year and choosing their own food as much as possible. We've had customers say that they can eat our eggs or our beef when they couldn't eat equivalents from the grocery store; the reason perhaps is the absence of irritants. For certain that's another great topic deserving of further study.

Artisanal and organic farmers find themselves on the front lines of a larger public-health debate as well: seeking to protect the health of humans by protecting farm animals in the larger ecosystem. For example, why is it legal, why even acceptable, to raise pigs in concentrated feed lots (CAFOs) where the ammonia levels rise so high that the pigs are routinely treated with a clotting agent to prevent recurring nose bleeds? Do we really want that happening to pigs? To the meat we eat? Why not treat pig nose-bleed risk with space and ventilation? Why not raise pigs only on diversified and pasture-based farms? *Why not?* Because until consumers are willing to change their expectations and accept more expensive meat as the price for better animal and human health, little will change. And until we broaden our ideas about what is delicious to include the redder, chewier (and much more flavorful!) meat that comes from animals allowed to roam, confinement farming methods will dominate.

Similarly, even though the evidence is already well established, scientists struggle to convince legislators and the voting public that superbug antibiotic resistance is caused by farm use of prophylactic antibiotics to counter ill health arising from the



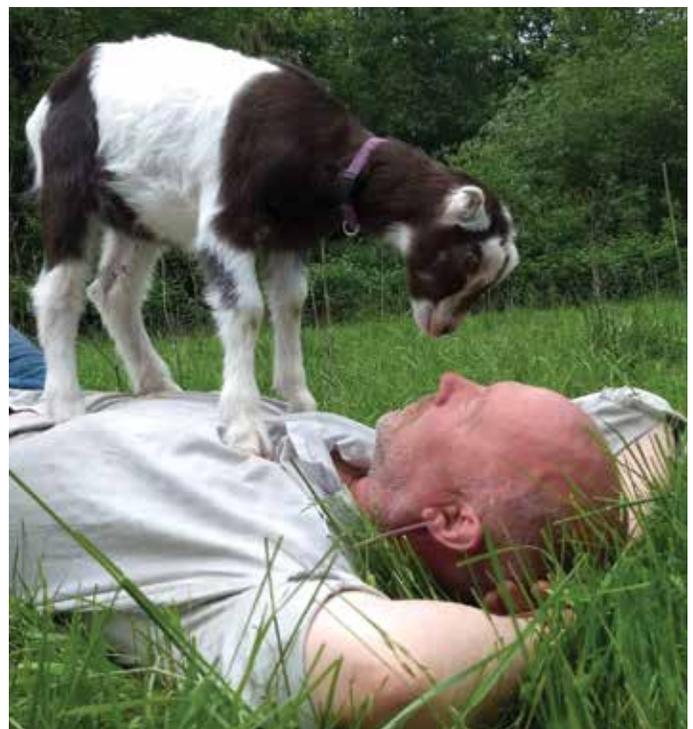


inhumane, cost-cutting conditions of commercial farms. We are in real danger as a whole community if we cannot break the lock that the mere financial considerations of big Pharma and big Ag have on the regulatory, legislative, and political world and put a stop to the abuse of antibiotics in farming. Solving the superbugs problem requires a collective commitment, not just better individual diets or a wider range of food options. As long as domestic and international farmers may use routine antibiotics, they will undercut the price of organic and humanely raised meat and eggs, and all of us will soon be paying a steep health price for that cheap, “tender” (I’d call it mushy) animal protein.

Such issues remind us that we cannot separate our own bodily health from the topic of environmental health; buying from organic and natural farms can also be a way to support the health of the planet, thus keeping our whole home safer. At Wingham Farms, we look to Britain’s ancient pastures and deep history of animal husbandry for an encouraging model as we work to develop land-healthy practices. For example, we are collaborating with the Natural Resource Defense Council on a 15-year project to divide our fields with British-style hedgerows and to create other silvo-pastoral areas. In total we have leased out 30 acres for tree planting, working to reduce soil erosion and lower the water temperature of the streams passing through our property, in part to increase fish habitat. We are implementing research suggesting that shade and shelter provide a healthier and more humane environment for grazing animals than open range, while also offering wildlife habitat and forage for threatened birds and insects, crucial in the ecosystem. A question we are curious to answer is whether we are just being kinder to the animals and the landscape, or whether we can also strengthen the food-value and quality of farm milk and meat off this kind of pasture. We would love to partner with some of the scientists among my fellow Marshall alums to find answers!

If you are not a farmer, researcher, policy maker, or journalist, you may feel that there’s little you can do to support food health, especially in the face of information that suggests more questions than answers. And yet each of us can make a number of important choices in the food and farming world

that support our own health and that of the larger community. Learn how to read food labels more clearly, so you can uphold your values with your purchases. Most directly, you can shop at farmers’ markets or use CSAs, offering your dollars to the farmers who are engaged in the healthiest practices. Please ask us hard questions, but then pay for the answers by buying something! Seek out the best food you can get for the money you have to spend. Choose what’s valuable for your own and the planet’s long-term health over what is a fad or an impulse; consider, for example, that \$9 for a dozen Wingham Farms’ pastured eggs is only about two drinks at CosmicCash coffee shop (and you don’t *need* what’s in that coffee). If you don’t know how to cook, start learning, perhaps beginning with easy, healthy soups and stews or with the fun of simple kefir or kombucha fermentation. As a voter, you can promote animal welfare and human health by calling your representatives and insisting on a law banning the routine use of antibiotics on farm animals. Lobby for better funding and support for the agricultural research arm of the USDA, which has been weakened recently by administrative changes. Support the children in your life by bringing them to see farms, which can help them build their immune systems, better understand where food comes from, and learn to value natural foods over processed ones. Grow an herb or vegetable garden, if you have space. Keep reading about food health in reliable sources and take the time to share your findings with friends on social media platforms. And appreciate those who raise your food for you! Gratitude is good for your health as well, so you can support your own physiology and psychology while encouraging the healthy-food movement, every time you thank a sustainable-farm owner or employee. Let us know that you value the challenging, smart, critically important work that we do: keeping everyone alive and well!



Daniel Lee, being stared down by a LaMancha goat kid

4-10-20 Update: During the COVID-19 pandemic Wingham Farms remains open to dispense food to customers, so we have added to our health protocols, even as disinfectants and PPE are scarce, requiring more home economics creativity: I'm now sewing cloth masks! We've seen meat and egg demand rise greatly in our

normal "off" season, as people can't find items in stores or are afraid to shop. Yet our friends who sell organic veggies to restaurants are watching their greens rot for lack of a supply chain. Coronavirus: one more reason to buy food local and direct!

And just for fun: Farm Garden Calendar (a double sestina)

Farm Garden Calendar (a double sestina)

January

Fleeting sun,
frozen earth:
worms all a-sleeping,
beneath their quilts of moldy leaves,
still & dreaming a mushroom growth
under frost-bit rain...



February

Misty-sleety-spitting-rain
rules, despite early-riser sunbeams
calling the tulips toward re-growing:
first spires clawing through the earth,
& baby rhubarb leaves
stretching crinkle-nosed out from sleeping.



March

Fragile fluff, the hillside sheeplings,
born amidst a dripping rain.
And wild plum trees in early leafing
call the dappled sunlight
back to couple black-eyed Earth
for stomachs' louder growling...



April

and tired farmers groaning -
over the dawn-chorus defeating sleep.
Mist-crowned earth
surprises with rain-
bows below rebellious sunbursts;
the goats straining for gold-green leaves.



May

Raucous, lusty leaving-
nestlings - ravenous in growing;
chilly picnics in pearly sunshine
beneath the fruit trees rising sappy;
a still-drilling rain
calling out the wriggling earth-



June

worm-snacks for moles turning upside-earth
under the pruner's grapevine leavings.
Unwinding hoses for sprinkler "rain",
as plants launch their campaign of growth,
while the guardian dogs lie snoozing,
dreamy in the bank of sun.



July

Reading runes in sun-
dried cracking's red-clay earth,
escaping goslings sneaky-creeping
under hedges of blackberry leaves,
snacking on fruit in the undergrowth
guarded by King Gander's reign



August

We've forgotten all the rain
amid the sweltering ever-sunshine
and the tomatoes' Miracle-Grow:
hard-laboring Mother Earth's
full-flowering, fruiting, all-a-leaf
in crescendo, sweating!



September

Then the endless reaping, sleepy
stacking, as staccato rains
gear up again and yellowing leaves
fall, new-framing the hazy sunshine,
the cooling earth's
hibernation 'guling...



October

Pumpkins finally all grown-up;
apple savor sweetening,
Boots struggle through the mucky earth's
foggy rain-
burnished oozing; cows munch on sun-
burnt, ice-rimed leaves.



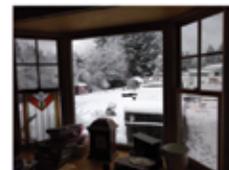
November

Windy trees now leafless
yet the granaries are groaning,
fickle sun
is off to cloudbanks snoring,
while sheeting rain
sings lullabies to earth.



December

Banked fires mirror the heart of Earth;
smoke rising beyond russet leaf-
piles, slumping in the hissing rain;
and slushy puddles ever-growing
'round the barns full-sleeping,
waiting all for new-born sun...



To grow food is to love the earth: waking or sleeping, bare-root or leaf-worth. In joyful sun or driving rain (knowing all will come again). — Julie Sikkink, Wingham Farms (January 8, 2020)

Helena Taylor ('95)

Aesthetic and Reconstructive Surgery

By Stanley Chang ('91)

Dr Helena Taylor is a board-certified Plastic Surgeon and Harvard faculty member. Here she gives us some information on current technology and practices in this field.

Facial asymmetry

Taylor: When I was doing my fellowship in Craniofacial Surgery in 2008, 3D-photogrammetry was emerging as a new technique for measuring surface anatomy. The Hospital for Sick Children had just purchased a new machine, and we decided that looking at baseline facial symmetry would be a good first project to try out the new technology and software. We came up with a technique for calculating a facial “symmetry score.” I asked for a photogrammetry machine when I took my first job at Alpert Medical School of Brown University/Hasbro Children’s Hospital. We imaged hundreds of people of all ages, ensnaring them as they walked down the hall or into the café. We calculated their symmetry scores and found that in patients without trauma or craniofacial history these values clustered quite tightly within a narrow range. Pathology such as cleft lip resulted in facial symmetry scores that were clearly outliers. (Interestingly, surgical residents also seemed to have unexpectedly high scores.) One of my very clever students noticed that, if you graphed age versus symmetry score, there was a small but significant correlation between age and asymmetry. This turned out to be a real trend. While we have to be careful about attributing causation, there are lots of reasons why we might get more asymmetrical as we get older. Now 10 years into practice,

and with three small children, I’m watching it happen in my own face!

Technologies in surgery

Taylor: It is always hard to know in the present moment what new surgical advances will be seen as leaps forward, versus macabre misadventures. We frequently berate our forbearers for performing operations that today are so clearly a bad idea, lobotomy being one particularly horrendous example. The advent of microsurgery in the 1960s and 1970s allowed for large pieces of tissue to be moved from one part of the body to the other by connecting minute blood vessels to sustain the auto-transplanted tissues. This also allowed plastic surgeons to replant fingers, ears, noses, and penises, and solve reconstructive challenges that previously had no good solution. In combination with advances in immunology, microsurgery has enabled composite tissue transplantation, moving large pieces of tissue including bone, muscle, nerve, skin from one patient to another. Face, hand, and penile transplants have all been described, and this is one of the hottest areas in plastic surgical research. These amazing operations have garnered a lot of media attention and provided answers for patients who had no good alternatives. But they have not been without complications, and history alone will judge whether this is a major advance, or fraught with peril.

International cosmetic surgery

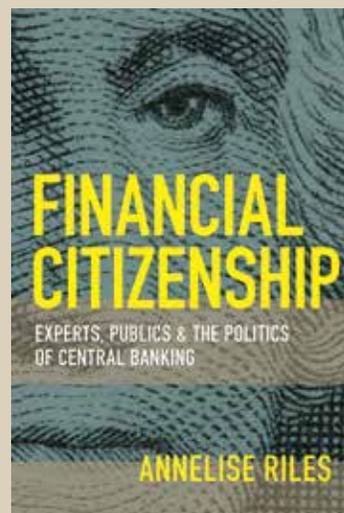
Taylor: There are countries that have a higher prevalence of cosmetic procedures than the United States: South Korea, Brazil, Iran are often cited. It really depends on what procedures you include and how you look at the data, or whether you normalize it to population. But if you look at total numbers alone, at least according to 2017 data from the International Society of Aesthetic Surgeons (ISAPS), the United States comes out on top. About 18.4% of all aesthetic procedures done worldwide are done in the US. What is easier to



Annelise Riles ('89)



Annelise Riles is the Executive Director of the Buffett Institute for Global Affairs and Associate Provost for Global Affairs, as well as Professor of Law and Professor of Anthropology (by courtesy) at Northwestern University. She is a recipient of the Humboldt Foundation's Anneliese Maier Prize. She holds a PhD in Social Anthropology from the University of Cambridge, a JD from Harvard Law School, an MSc in Social Anthropology from the London School of Economics, and an AB from Princeton University. Her research concerns the culture of legal institutions, and she has conducted extensive field research in international organizations and in global financial markets. She writes about subjects ranging from human rights to financial regulation, and her work spans the disciplines of law and anthropology.



In her most recent book, *Financial Citizenship: Experts, Publics, and the Politics of Central Banking* (Cornell University Press), Riles examines global financial governance in the wake of populist and nationalist attacks on central banks and central bankers. Tackling the urgent need for new ways of understanding the purposes, roles, and challenges of financial governance, she reveals that conflicts about the work of central banks are in large part the product of a culture clash between experts and the various global publics that have a stake in what central banks do. The book is a call-to-action for all of us, experts and publics alike, to address this culture clash and the resulting legitimacy crisis head on, for our economies and our democracies.

conclude is that numbers of cosmetic procedures are going up almost everywhere. And many patients in the US do travel to get less expensive care abroad.

Reconstructive surgery

Taylor: While the public perception of plastic surgery is biased towards aesthetic procedures, it is actually a very broad surgical field. We operate on all tissue types, all over the body and in all age groups. One mentor called it “surgery of the skin and its contents.” We treat patients with congenital anomalies, traumatic injuries, burns, cancers, or a difficult problem that needs a creative solution. Often we are called in to help other surgical specialties, when they have an issue: an exposed heart after cardiac surgery, an infected knee implant, or an exposed cranial plate. When we are our best selves, we are “the surgeon’s surgeon.” While I used to see aesthetic surgery as a completely different realm of plastic surgery, there is tremendous overlap, and doing some of each actually does make you better at both. Or at least that’s what we tell ourselves!

Breast implants

Taylor: Breast implants have been in the spotlight this year when the FDA recalled certain textured breast implants implicated in a newly identified form of anaplastic

large-cell lymphoma (ALCL). Decades ago Dow-Corning was rocked by class-action lawsuits that asserted a connection between autoimmune diseases and breast implants. Although this was largely debunked and silicone implants were reintroduced a decade ago, many questions remain. The numbers on ALCL with particular implants were enough to recommend they be pulled from the shelves (but not *interestingly* from patients).

Gender-confirming surgery

Taylor: Gender-confirming surgery has been one of the most rapidly evolving and growing areas of the field. Caitlin Jenner singlehandedly exploded the field with her very public transformation. While forms of these operations have been around for years, surgeons were few and far between, and patients often traveled to a handful of places to get surgery. I never saw gender-confirmation surgery in my many years of training in the 1990s and early 2000s. In fact the idea of altering or removing “normal anatomy,” for a field that prided itself on restoring “normal anatomy,” was a hard nut for many to swallow. The increase in awareness and diagnosis of gender dysphoria, and shifts in public perception, combined with legislation that mandates insurance coverage for many procedures, have mainstreamed procedures that even a few years ago were rare.

RESHMA JAGSI ('97)

Promoting Women's Health and Women's Careers in Academic Medicine

Image credit: brk/bigstock.com

Reshma Jagsi began studying social policy at Oxford after her second year at Harvard Medical School and ultimately earned both her DPhil and her MD. A relatively unconventional but deeply rewarding academic career has followed from the unique perspective she has as both a physician and a social scientist.

Jagsi describes a commitment to studying and influencing issues at the intersection of medicine and social policy that derives largely from lessons that her parents taught her at a young age. Her mother, a Muslim who grew up in an era when girls did not receive math or science education beyond the 6th grade, managed to gain a scholarship that was in some ways like the Marshall. This scholarship brought students from Africa to study in the United States (and her mother attended the University of Wisconsin, in the heyday of the 1960s). One summer, Jagsi's mother traveled on a "peace caravan," and Jagsi reports being inspired by her scrapbook, "filled with newspaper clippings including pictures of a 6-foot tall, brown woman, standing before rooms full of white US Southerners, with headlines declaring: 'African student arrives to speak about world peace.'" Jagsi goes on to describe how her interest in social activism inspired by her mother combined with an interest in medicine inspired by her father: "My mom never planned on marrying, but when she was well into her 30s (which in her generation made her an 'old maid'), she met my father, a Hindu Indian physician from her hometown. She left Tanzania before he did; he was finally convinced to leave when the newspapers announced that physicians were being nationalized (and he tucked his medical school diploma

into the newspaper, boarded a flight for what he claimed was a five-day vacation, with only that diploma, five British pounds, and five days' worth of clothes, and never returned). I ended up becoming exactly what you might expect the kid of those parents to become: a little unconventional, fascinated by the math and science and medical career that my mother never got to pursue, and deeply committed to service, to prevent the sort of political situation that my parents had to flee. I'm probably the only American kid of Indian descent whose parents were actually disappointed when I decided to go to medical school; they always encouraged me to do more to influence policy and society. I feel so fortunate that my education at Oxford has allowed me to enjoy the tremendous personal satisfaction that comes from being a traditional physician-scientist while also getting to have a broader impact on policy and practice."

Internationally recognized as a physician-scientist who focuses on the treatment of breast cancer, Jagsi seeks to individualize radiation therapy for women with the disease. She explains that a growing understanding of the biologic heterogeneity of breast cancer has opened up many exciting avenues of research. "Surgeons have been leading the way for decades in de-escalation of treatment for patients with favorable prognoses. We have gone from disfiguring radical mastectomies and lymph node dissections that can lead to significant disability from lymphedema to much more limited surgical techniques of breast-conserving surgery and sentinel lymph node evaluation. Similarly, in radiation therapy, we are now able to reduce the toxicity and burden of treatment by using our knowledge of biology to shorten radiation treatment courses and even omit radiation therapy altogether for some patients." On the other hand, some women with more aggressive forms of the disease still have suboptimal outcomes even with mastectomy, modern chemotherapy, targeted therapy, endocrine therapy, and radiation therapy. For these women, like those with a rare form of the disease known as inflammatory breast cancer, Jagsi is leading research to combine radiation treatment with novel medications that inhibit DNA repair in an attempt to radiosensitize tumor cells while



Dr Jagsi speaks with a patient receiving a CT simulation for treatment for breast cancer.

Photographer: Marcin Szczepanski.

sparing normal tissues. She describes leading clinical research from concept to safety evaluation to assessment of efficacy in large-scale national clinical trials as one of the most rewarding aspects of her career.

As a social scientist, Jagsi extends her research on breast cancer to rigorous evaluation of patients' experiences with care and decision-making processes. With the support of large grants from the National Cancer Institute, the Komen Foundation, the American Cancer Society, and others, she seeks to develop innovative tools to help communicate complex risk information and provide emotional support to patients making risk-benefit trade-offs when deciding on treatments to pursue after receiving a dreaded diagnosis. She notes that psychologists have identified how useful simple changes in doctor-patient communication techniques, such as the addition of pictographs, can be, and she notes excitement about deploying cognitive behavioral therapy techniques to see if they can help reduce overtreatment for breast cancer that is sometimes driven by patients' very understandable but counterproductive fears. She is now a member of the American Society of Clinical Investigation.

Jagsi's training as a social scientist and bioethicist has also led her to pursue a number of other avenues of research, including studies of conflicts of interest, resource allocation, and the ethics of using big data collected during routine medical encounters for research and quality improvement purposes. A Fellow of the Hastings Center, Jagsi is also Director of the Center for Bioethics and Social Sciences in Medicine at the University of Michigan.

No profile of Jagsi would be complete, however, without discussing the area for which she has perhaps become best known within the field of medicine: gender equity. She says she first stumbled upon this subject when she was a student at Oxford. While conducting ethnographic field research in British and American teaching hospitals for her doctorate, she began to observe gender differences in experiences and attitudes; never having taken a women's studies class in college and with women in the majority of her own Harvard Medical School class, she had not expected the findings that emerged from her field notes. During her residency training at Massachusetts General Hospital, she went on to lead a study documenting the remarkable under-representation of women in prominent authorship and editorial positions at major medical journals. This led to a number of grants, including one from the National Institutes of Health, specifically directed at understanding the causal mechanisms for women's persistent under-representation in senior leadership positions in academic medicine.

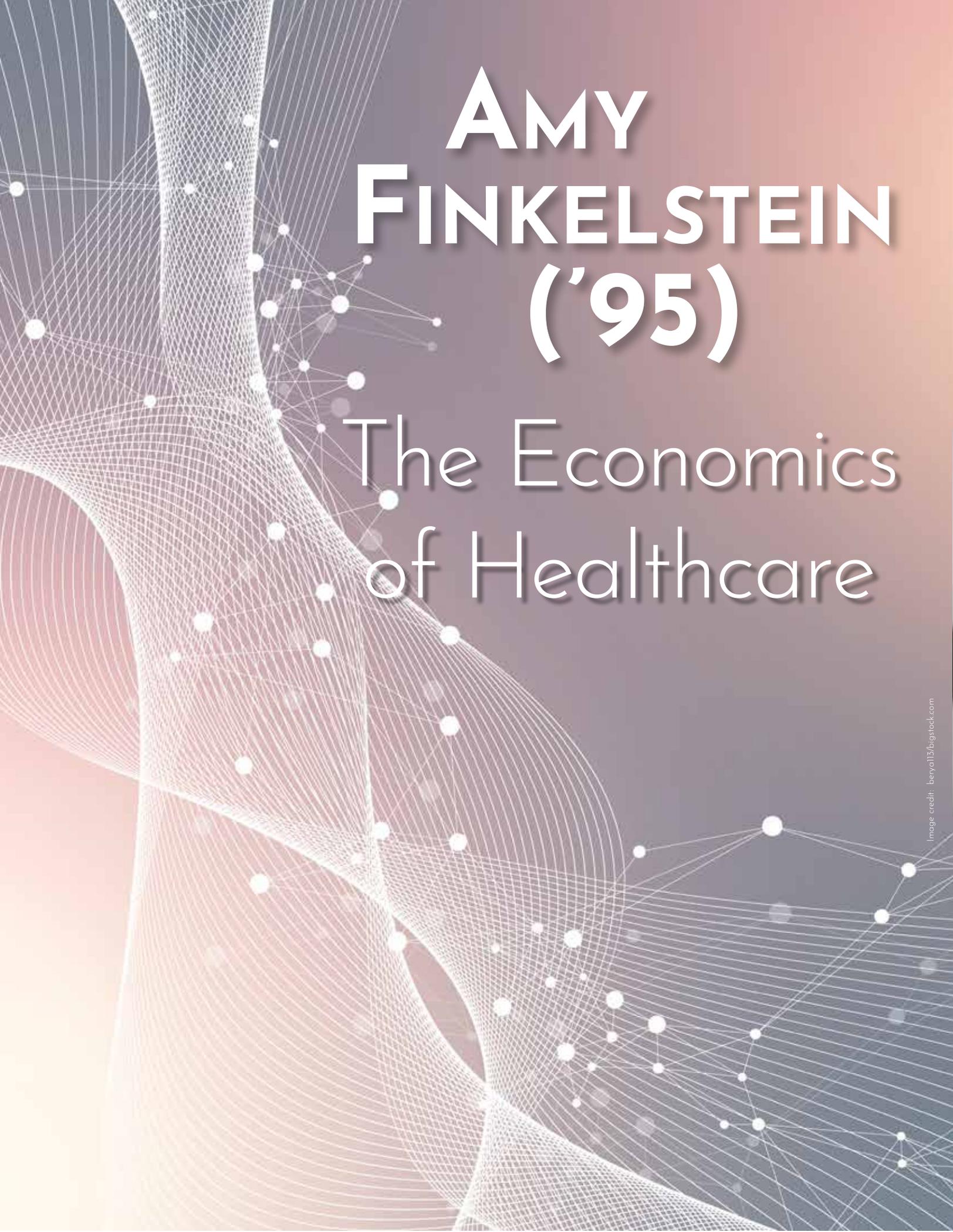
Jagsi explains that, although women have constituted over 40% of the medical student body in the US for over a quarter of a century, and now constitute half of all US medical students (and the majority of British medical students), her research has revealed the ways that unconscious bias, gendered expectations of society, and overt discrimination and harassment have hindered women from reaching senior positions of influence and authority in the field at the rates that would have been expected. Her research suggests that women will not reach parity among US medical school deans until the current class of medical students (who are half female) have retired. Perceiving an urgent need, she has devoted effort towards developing



Reshma during her sabbatical leave working with the Oxford Early Breast Cancer Trialists Collaborative Group, complete with two kids in their Christ Church Cathedral School and Oxford High School Junior School uniforms, on her old stomping grounds at Magdalen

evidence-based, targeted interventions to promote gender equity in the field, which she describes as “awfully complex, but no more so than cancer.” She currently serves as the national program evaluator for an effort being implemented at ten US medical schools to support physician-scientists with substantial extraprofessional care-giving demands, a program inspired by her work and the recognition that women in our society, even high-achieving physician-scientists, are more likely to bear the greater burden of domestic labor. The policy impact of her work ranges from influencing the policies of funding organizations so that they avoid unconscious bias and reward institutions that prioritize equity, to driving reconsideration of how national accrediting organizations govern parental leave from graduate medical education. Jagsi is a voice for the #MeToo movement in medicine, which has one of the highest rates of sexual harassment ever documented. She is a founding member of TIME'S UP Healthcare, which seeks to apply principles of healthcare quality improvement to address the structures and processes that lead to gender inequity.

Throughout her work, Jagsi has maintained the affection for the British people fostered during her time as a Marshall. Her whole family (including law professor husband John, daughter Sarina, and son Jack) joined her for her sabbatical leave in Oxford a few years ago. Her ongoing collaboration with the Oxford Early Breast Cancer Trialists Collaborative group takes her back to Oxford each year, and she continues to visit her doctoral supervisor, Rebecca Surrender, with whom she co-authored a piece on gender equity in the *Lancet* just this past year. “The Marshall gave me a unique opportunity to broaden my horizons and become a citizen of the world. My favorite quote, which I think I may have mentioned in my Marshall application, has always been the famous line from Edmund Burke: ‘All that is necessary for the triumph of evil is for good men to do nothing.’ The Marshall gave me the skills, network, and inspiration that have allowed me to do something with my life that feels really meaningful. I will always be grateful.”



AMY FINKELSTEIN ('95)

The Economics
of Healthcare

A professor of economics at MIT, Finkelstein specializes in public finance and health economics. Her research focuses on market failures and government intervention in insurance markets and on the economics of healthcare delivery.

In 2008, the state of Oregon, having had to close new enrollments because of budget shortfalls, decided that it had sufficient funds to grant Medicaid to 10,000 residents and that the fairest way of allocation was to use a lottery system. “When I heard about this plan,” she said, “I jumped at the opportunity to work with a rare randomized control population in the study of healthcare.”

Finkelstein is an empiricist, and her research in economics is strongly based on rigorous mathematical and data-analytic tools to arrive at conclusions on controversial social policy issues. The lottery in Oregon was an empiricist’s dream. Studying the ensuing behavior of these lottery winners,

as well as the losers, Finkelstein and her co-researchers tried to answer some long-fought question about health insurance. For example, does covering low-income uninsured adults with Medicaid increase or decrease their use of the emergency room? Answer: it increases it.

Finkelstein is a co-founder and co-Scientific Director of J-PAL North America, a research center at MIT that encourages and facilitates randomized evaluations of important domestic policy. One of her recent J-PAL projects

studied a high-profile intervention designed to reduce hospital readmissions among very high-cost patients, so called “super-utilizers” of the healthcare system. Despite promising observational analyses showing a sharp decline in hospital readmissions following the intervention, the randomized evaluation showed that the program actually had no effect on hospital readmissions: rates of hospital use were the same for those randomly assigned to the program and those randomly assigned to status quo care, and the ostensible “success” of the program merely reflected regression to the mean as individuals who are high-cost at a point in time will tend, on average, to be lower cost in the future, with or without intervention.

Seemingly fearless about managing huge, complicated data sets, Finkelstein has a vast array of social policy research goals about issues that many of us would consider overwhelmingly



unwieldy. For example, she is examining the extent to which opioid abuse is driven by person-specific factors like economic opportunity or substance abuse history, as opposed to place-specific factors such as the local physicians’ propensity to prescribe opioids or policies that govern prescription medication. She is also working to understand the sources of high healthcare spending and waste in the healthcare system.

“Economics and social policies can be analyzed scientifically,” she emphasizes.

Some of the results of Finkelstein’s research can be found on her website <https://economics.mit.edu/faculty/afink.aa>.



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Ambika Bumb ('05)

NANOMEDICAL

TECHNOLOGY

with Ushma Neill ('99)

This interview was conducted on June 30, 2018, at the Marshall Forum on Innovation at Stanford University.

Ushma Neill:

Can you tell us a little bit about your work?

Ambika Bumb:

I run a biotech startup called Bikanta in which we use nano diamonds. These small diamond particles have unique properties that allow us to follow them and image them to target and detect different kinds of diseases early. Primarily we're looking at cancer targets related to melanoma.

Neill:

What is the future of innovation within imaging?

Bumb:

The big frontier is combination of imaging with diagnostics, and on the nanomedicine side, the combination of diagnostics and therapeutics together is called theranostics. Nanoparticles are great because you have the ability to follow and image

them, and they also can be used as carriers of therapeutics. On the imaging and device side, the big future is image-guided surgery and robotics, using imaging to do better surgical procedures so that they are less invasive with fewer side effects. So in both directions, both with the device side as well as the contrast agents, it is this combination of therapy and diagnostics together that interests us.

Neill:

If you were not bound by reality, what would be your science-fiction inflected vision for imaging in the future?

Bumb:

That we could inject particles that are not bound. But honestly, I don't think this is unrealistic even now. We could inject particles that have the ability to hone in on a particular disease. What I'm envisioning is akin to those magic school bus videos from when I was a kid: you inject a tracer to go and find and study a different disease or organ. I would home in on micro-metastases of tumors, those that we have difficulty visualizing without any kind of a contrast agent enhancement. A particle itself could either deliver a therapy or could be heated up to destroy that tumor. So my vision is being able to use nanomedicine to visualize and see all of that, even on a microscopic scale. I don't even think it's unrealistic; I think it's where things are going.

Neill:

What did you plan to study on your Marshall?





Bumb:

I went on my Marshall to do a DPhil in nanomedicine. I worked on developing a nanoparticle that could be seen across three different imaging modalities, magnetic resonance imaging (MRI), positron emission tomography (PET), and optical imaging. I studied two very different kinds of diseases: autoimmune diseases like multiple sclerosis as well as cancers. I had a nanomedicine focus when I was there.

Neill:

Do you have any other recollections of your time as a Marshall?

Bumb:

I have so many recollections from being a Marshall. The entire experience reshaped how I thought about science and my career. I learned how to think about science differently. In my experience in the US versus the UK: in the US where I had a lot of resources, we would do maybe five experiments to try to see what we got, whereas in the UK, we would think very strategically about what was the best experiment to do, and I think both of those shape how you approach science and technology development. The whole experience broadened my perspective, and furthermore changed the kinds of friendships that I made. Even today, 10 years later my closest friends are from my experience abroad. I also can't under-value my professional contacts. My primary advisor from my Marshall days is a part of the Board of Advisors of the company that I now run.

But I also got to think about things from a bigger perspective, from science and nanomedicine policy, to seeing things in a part of Europe, how policies there are different than in the US. Afterwards, I came back to the NIH and I built on those relationships and connected some of the government agencies in the UK with the agencies that were at the NIH. It was a great experience to be involved

in that bigger picture and see the connection and bond between the US and the UK. Learning to develop those skills and making those connections and building those relationships is something that's going to continue to carry forward throughout my entire career.

Neill:

Do you have a favorite Marshall moment?

Bumb:

My favorite Marshall moments probably related to the trips that we took as an entire class, when we went to Scotland, when we went to Wales. So many funny things happened that it's hard for me to point to just one. Here's an example. When we were first leaving from the US to the UK as a class, our flights got delayed. We were all sitting in the airport, and we had four or five musicians who were part of the class, and they just took out their instruments and started playing. A bunch of singers started singing, and we had this huge musical performance at the gate before we were taking off. There was just this unique bond within the class which was fun to experience.

The group activities that we did were great. On a personal or individual level, I had the opportunity to present my work at the Houses of Parliament, and that was really extraordinary. The whole experience of it was unique and something that's very memorable for me.

In December 2019, Ambika began a two-year sabbatical from her role as CEO and Founder of Bikanta to serve as a Health Science and Technology Adviser in the Office of the Secretary of State on crisis response and strategy. She says this decision was taken to "gain some perspective on science policy and diplomacy, government leadership at the higher levels, and interagency foreign coordination, while also seeing if I can provide a positive impact."

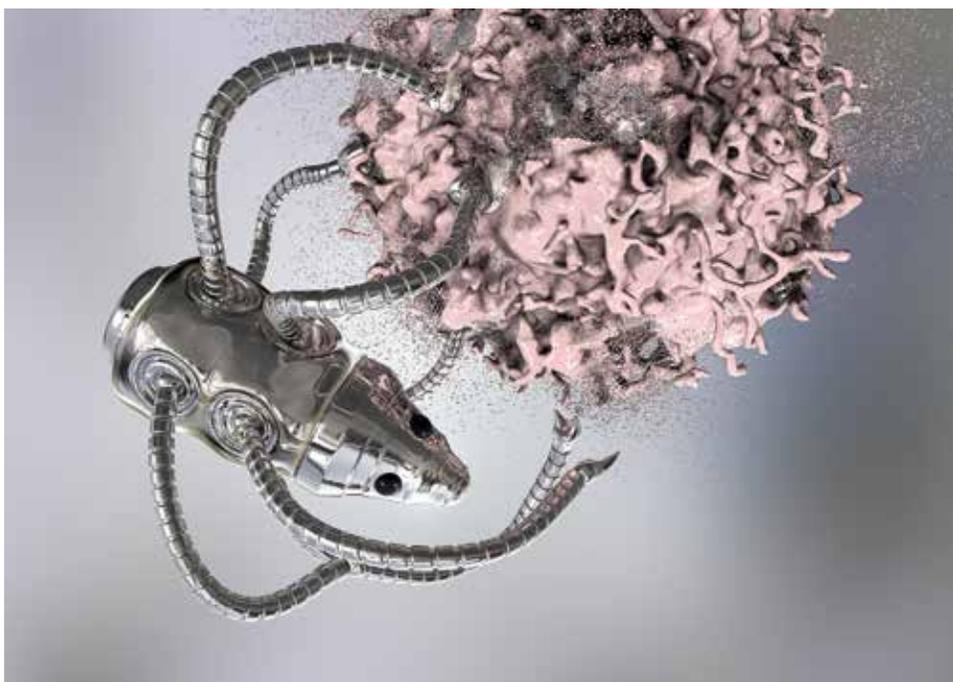


Image credit: [Tyrannosaur.us/bigtok.com](https://www.bigtok.com)



Dan Barouch ('93)

HIV vaccine pioneer

By Ushma Neill ('99)

According to the United Nations, there are nearly 40 million people across the globe living with HIV/AIDS. Significant strides have been made to turn HIV infection from a death sentence to a chronic disease, but Dan Barouch ('93) is cautiously optimistic that there will one day be an HIV vaccine to prevent any infection at all.

The bulk of spending on HIV in the past few decades has centered on implementing behavioral interventions like male circumcision and pre-exposure prophylaxis (PrEP) and providing treatment with antiretroviral therapy (ART). Unfortunately, there are a number of barriers to current prevention and treatment strategies, especially for women in sub-Saharan Africa, who often have suboptimal access to medical care and face stigma for the possession of ART pills. For those in high-risk groups, an HIV vaccine cannot come soon enough.

VACCINES: WEAPONS OF MASS PROTECTION

Many vaccines contain weakened or killed versions of the same germs that cause disease; for example, the measles vaccine contains a weakened version of the measles virus. In other cases, a vaccine contains only a part of the disease germ, for example a surface molecule or part of its DNA, so that the body can recognize it, but is ineffective at infection. After injection, the weakened virus or bacteria or the part of the pathogen stimulates the immune system to produce antibodies and other immune responses, as it would have done if one were exposed to the actual disease pathogen in its full strength.

With HIV, Barouch explains, there are many quirks to the virus that prevent an easy vaccine strategy. HIV infects cells and is propagated in a unique way: HIV inserts a copy of its own genome into an infected cell's chromosomes. That host cell then treats the viral DNA as part of its own set of genes, transcribing and translating the viral genes along with the cell's own genes, producing the proteins required to assemble new copies of the virus. Barouch notes, "HIV integrates into the host genome very early and very quickly, likely within days after exposure and before one could be diagnosed, and once that happens, there is no known cure." For an HIV vaccine to block infection, it would have to work exceedingly quickly, and such potent vaccines generally do not exist. By contrast, if you had the measles vaccine as a child and were later exposed to someone with measles, you would actually get infected by the measles virus. But your vaccine responses would kick in, and you would rapidly clear the virus before it made you sick. "Not so with HIV," notes Barouch, "because if any HIV replication occurs, it would likely be sufficient to seed a reservoir that would last a lifetime." No vaccines so far have been able to surmount this massive challenge.

Further complicating vaccine strategies is the fact that the HIV virus itself can be tremendously variable throughout the world and even within each infected individual. Much like the flu virus, which is different each year, HIV has vast changes in its viral sequence. "Imagine the challenge: if you need a different flu vaccine every year, how could you make an effective HIV vaccine when HIV has orders of magnitude more variability than influenza?" He notes many other major stumbling blocks that have also made production of an HIV vaccine extremely complicated.

Why not give up and take on an easier challenge? Barouch is not shy in the face of challenge. "I can't tell you how soon it's going to happen," he says, "but the science behind HIV has advanced tremendously in the last two decades, and in the end science will prevail." He notes that the HIV field is at a crossroads, with five large clinical efficacy trials being tested at present, representing two different vaccine candidate strategies. Two of these ongoing efficacy trials are based on Barouch's work. Meanwhile, next-generation vaccines aimed at inducing broadly neutralizing antibodies and passive immunization approaches are also being developed.

GETTING STUCK INTO VIRUSES AND VACCINES

The son of academics, Barouch was always academically motivated. His father is a math and computer science professor, and his mother finished a PhD in biochemistry when Barouch and his older sister were in high school. From an early age, he found science and math to be fascinating and as beautiful as art or music, which were valued in equal measure in his home. He has played violin since he was a child and continues to play every day with his two daughters. Because of his poor handwriting, his mother dispatched him to calligraphy lessons when he was in middle school, and a predilection for roman chancery cursive persists to this day. "I did all my own wedding invitations and those of my sister by hand. But I still have terrible handwriting!"

Regardless, science and chemistry overtook his young mind and became his way of "describing the world around us." He fixated early on an eventual medical career but sought a strong grounding in basic science. During his biochemistry-focused undergraduate years at Harvard, he happened to take an immunology class taught by a giant of the field, Jack





Strominger, who had just spent a sabbatical year at Oxford. He had already applied and was admitted to Harvard Medical School (HMS), but he knew he wanted an international scholastic opportunity and during his search for fellowship opportunities had come across the Marshall. Strominger suggested that he get in touch with a famous Oxford immunologist, Andrew McMichael. “I can say for sure that my time as a Marshall Scholar and specifically at Oxford set the stage for the rest of my career. I was deciding between studying immunology and infectious disease or cancer biology, and the intense period I spent with McMichael in immunology set me on my current career path,” says Barouch. Intense is an apt word to describe Barouch’s time at Oxford, where he finished a DPhil in a head-spinning two years, writing and defending his thesis in 6 weeks. The McMichael lab focused on how the immune system sees viruses, and Barouch added the angle of studying how those with different genetic backgrounds (African versus mixed-European descent) might react differently to viruses and specifically to HIV. His work showed that single amino acid changes in individuals from different genetic backgrounds led to a completely different way in which their cells recognized HIV.

Upon return to HMS, Barouch was unsure if he was headed for an academic research path, and even considered neurosurgery as his potential professional path. But McMichael kept in touch and asked him to check in with an old friend, physician-scientist Norm Letvin, Chief of the Division of Viral Pathogenesis at the Beth Israel Deaconess Medical Center. Barouch spent time during medical school performing research in Letvin’s lab, and the connection grew and was sustained even after medical school during Barouch’s clinical training. Letvin’s focus was on HIV vaccines, and Barouch was hooked. He obtained two small grants around the time that his clinical training was concluding; they allowed him to transition easily onto the faculty at HMS, where he continues to work.

Currently Barouch is the Director of the Center for Virology and Vaccine Research at the Beth Israel Deaconess Medical Center, supported by a \$20M yearly budget from the NIH, Gates Foundation, philanthropic, and industry sources. His lab’s most recent HIV vaccine candidate is one of five to reach human efficacy trials in the history of the HIV epidemic worldwide. Barouch’s team has also started the use of broadly neutralizing antibodies for HIV therapeutics, for which a series of Phase 1 clinical trials is underway.

A TO Z: FROM AIDS TO ZIKA

This research on HIV vaccines and specifically on the complex vectors needed to design effective vaccines allowed him to address another recent mosquito-borne infectious threat, Zika virus, which exploded into crisis levels in January 2016, especially in South America. “I had no forewarning of the Zika epidemic; I think I might have seen Zika in a table of flaviviruses when I was studying for my infectious disease licensing Boards. I don’t think I had a single conversation about Zika virus before January 2016.” Regardless, Barouch was able to leverage his lab’s existing platforms and animal models to develop and test three Zika vaccines. Beyond being motivated by the three Brazilian postdoctoral trainees whom he hosted in his lab at the time, Barouch notes, “My initial assessment was that a vaccine would be feasible because, unlike HIV, most people who get Zika will recover and then have protective immunity that makes them resistant to rechallenge. So, it was clear to me that the human immune system knew how to mount a protective immune response against it. Zika also didn’t have the same virus variability problem of HIV, making it an excellent candidate for vaccine development.” His lab showed that all three vaccine strategies provided full protection from illness in mice and monkeys, and his team collaborated with the Walter Reed Army Institute of Research and Janssen Pharmaceuticals to advance these vaccines into first-in-human clinical trials. Some data have already been reported, but he enthusiastically added, “the best is yet to come. Happily, the Zika outbreak is much more contained at present, but that makes the path forward for efficacy testing and licensing of Zika vaccines more difficult.”

When pressed to answer directly whether his team will be able to eliminate infectious diseases in the future, Barouch says he’d be delighted to be out of a job. “My goal is to put myself out of business. That being said, I think there will always be challenges between the microbial world and the human world. There have been outbreaks of emerging or re-emerging infectious diseases almost every year with a surprising and disturbing regularity. Just in the last few years, we’ve been up against SARS, MERS, bird flu, swine flu, Ebola, and Zika, to name a few. If we are so fortunate as to put ourselves out of business for HIV—still a very tall order, by the way—then I have a feeling there will still be other pathogens to tackle.”

Barouch and Johnson & Johnson’s Janssen Vaccines announced in mid-March that they have entered a \$1B collaboration to support the development of a preventative vaccine candidate for COVID-19.



Dan Barouch and Ushma Neill

Sarah Nakasone

('19)

Her Work in HIV Prevention



Image credit: LightField Studios/bigstock.com

For her 20th birthday, Sarah Nakasone had a meeting with one of London's foremost HIV activists. Will Nutland, a lecturer at the London School of Hygiene and Tropical Medicine (LSHTM), had been told to look for the "lonely little American girl" sitting in the corner of the school's café. He spent the afternoon telling her about the small group of Londoners fighting NHS England for access to PrEP, a once-daily pill that prevents HIV.

For Nakasone, the conversation sparked a career.

Now a 2019 Marshall Scholar back at LSHTM, she has spent the better part of the last four years working to increase access

to PrEP across three continents. "It felt like coming home," Nakasone says of her work. "I spent those first 18 months of college feeling incredibly isolated. I had grown up in a close-knit military community, the type of place where everyone feels like family, and I lost that when I arrived

at the University of Chicago. I was isolated by my inability to explain to friends what it felt like to see your father's face in battlefield statistics, to explain why I even tracked those statistics in the first place. Falling into HIV and HIV-prevention let me fall back into a community that felt just as much like a family as the one I had left. In both cases, we were inoculating those we loved from isolation, from the reality that no outsider can understand what it feels like to face a flag-draped coffin, or a diagnosis that marks you dirty and diseased."

"We can have all of the technology in medicine we want," she adds as an afterthought. "We can have pills to prevent HIV or a vaccine or even a cure. But if we don't recognize that, to help an individual truly, we have to enrich their community, we're not going to end HIV."

Shortly after meeting Nutland, Nakasone worked as a researcher for the Africa Health Research Institute in a rural area of South Africa where a third of the population had HIV. As part of a larger project for the Gates Foundation and the President's Emergency Plan for AIDS Relief (PEPFAR), she helped design an assessment of the readiness of the health system to distribute PrEP to women not much older than she was. "It was frustrating to sit across from healthcare



Women are ready to talk about PrEP

~~doctors~~
~~activists~~
~~volunteers~~

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workers insisting there was no need for sexual health programming, describing how they planned to shame and scold young women who asked for PrEP. But it was also a reminder that we rolled up with our ‘miracle drug’ that had worked for white, gay men in the US and often failed to work in other communities and adapt to local needs. It wasn’t that these health care workers didn’t know that HIV was a problem in the area; it wasn’t that their hearts weren’t breaking with what they saw in the clinic every day. It was that they thought our intransigence about PrEP distribution was going to get people killed.” After finishing her work in-country, Nakasone advised South Africa’s National Technical Working Group on PrEP about ways to adapt rollouts better for their rural areas.

Back in the US, Nakasone started working for the Chicago Center for HIV Elimination, where she led recruitment for a study that trained young black men who were having sex with other men to talk about HIV prevention in their communities. The HIV positivity rate in her clients in Chicago was on par with the women with whom she had worked in South Africa. She also began preparing for her first move to London, where she had been asked to lead the inaugural research study around PrEP perceptions in UK black and minority ethnic women. In both areas of work she built on the lessons she learned in South Africa: ignoring community perspectives in PrEP work would lead to failure at best and fatalities at worst. She spent a panicked summer between London and Glasgow implementing the ideas by interviewing over 30 women on their thoughts on PrEP and safer sex and working with activists, clinicians, and charities to see those thoughts incorporated in official policies.

As NHS Scotland started its second year of PrEP distribution with crushingly low levels of uptake in women, they pulled in Nakasone to advise. “I was multiple years decades younger than anyone in that room with a Midwest accent that almost dares someone to ask about how well the US health system is doing when you start critiquing the NHS,” she laughs, “but I had spent a summer asking women to share their most personal and painful memories around sexual health and healthcare. Getting the chance to elevate voices that almost never make it in front of policy-makers is the highest honor in this work.”

Nakasone will use her second year of the Marshall Scholarship to study politics and international studies at Cambridge. It is a leap of faith for someone who switched career paths while applying for the Marshall from wanting to be a medical practitioner to wanting to be a foreign service officer. “I don’t think you have the childhood I did without believing that public service is the highest calling,” she admits, “but I also don’t think you can do the work I’ve done without wanting to fight for the infinitesimally small part of the budget the US spends on health aid. PEPFAR saved a generation in sub-Saharan Africa, and many of those people believe in the best that America can be. I don’t know of a more hopeful space, championing the community that raised me and fighting for the communities who let me work for them.”



Laura Hallas ('19)

Global Health

Interviewed by Stanley Chang ('91)

Image credit: masoud_rezaipoor/bigstock.com

Current Marshall Scholar Laura Hallas was interviewed by Stanley Chang.

Q: Tell us a bit about your background and your studies as a Marshall, as well as your plans for the next few years.

Hallas: Academically, my background is very varied. I studied economics and health and society at UT Austin, where I was also in a liberal arts major and honors program called Plan II. During that time I had internships with a pathology nonprofit, a development consultancy, and even the State Department. Despite their range of approaches, with each role I focused on some aspect of health systems. I've always loved to write. I began journalistic writing because it was the best way for me to get close to the subjects I was interested in. With the purpose of an interview request I could contact congressional offices, top public health officials, and leading academics to whom I would never have had access otherwise as an 18-year-old. But as I gained experience as editor-in-chief of UT's paper, *The Daily Texan*, and worked on the *Dallas Morning News* editorial board, I began to find my own place in it all. Most journalists don't have public health experience, and most public health professionals don't write for lay audiences. In that gap, I found my niche.

I applied for the Marshall because I wanted to study public health and international governance outside of a US-centric system and because of the incredible reputation of The London School of Hygiene and Tropical Medicine in my field.

I am midway through my MSc in Public Health at LSHTM now, where I am focusing on policy and governance. My thesis work is on perceptions of military involvement in Sierra Leone's Ebola response. Militaries are being involved more and more in epidemic response, but there's not much research out right now on how their presence affects the response.



Next year, I will continue studying global health policy at Oxford or Cambridge before attending law school to study global health law.

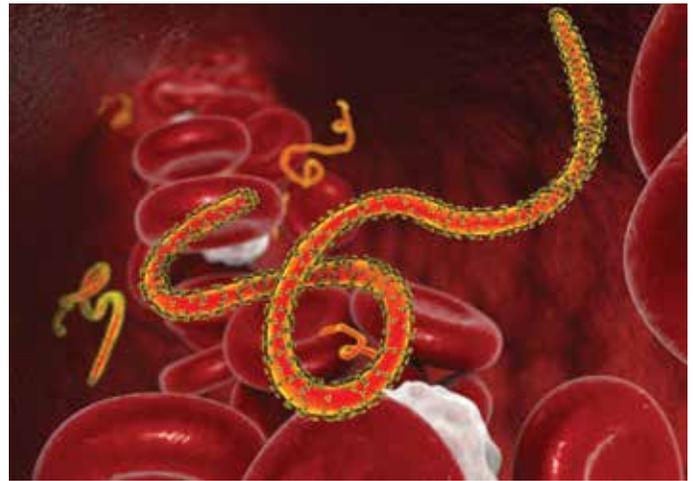
Q: Tell us about your interest in Ebola while in high school. Can you give us a quick run-down on the etiology and epidemiology of Ebola in the last 5 or 6 years?

Hallas: I lived just a few miles away in Dallas from the hospital where Thomas Eric Duncan became the first person diagnosed with Ebola in the US. He had helped a sick neighbor seek care before moving to the US to be with his family, where he ultimately passed away. Dallas only had one Ebola case, but the public response was dramatic. Friends of mine skipped class, and neighbors canceled meetings downtown; at one point guys in hazmat suits were called to investigate spit on the sidewalk. I also saw more insidious things, like conservative politicians insinuating Mexican migrants would bring more diseases into our borders. Until that summer, global health had been an abstract concept to me. But then it was my city making headlines, my neighbors responding out of fear, and my leaders using disease for political talking-points. That's when my sights first turned to global health as a career, because ultimately all "global" health is local for someone. Years later, I actually wound up interviewing Duncan's widow when I returned to the *Dallas Morning News*, bringing me even closer to the human side of the epidemics that most of us only read about.

That was during the 2013–2015 West African epidemic, which was largely limited to Sierra Leone, Guinea, and Liberia. Since then, the DRC has been experiencing an outbreak exacerbated by existing conflict in the region, and surrounding countries like Uganda and Rwanda have been on the alert. We have known about Ebola in Central Africa since the 1970s, but its emergence in West Africa and in more urban environments was significant in 2013. One of the cruelest aspects of this disease is that it affects carers most; it's very hard to get infected if you are not in close contact with a patient and their bodily fluids. So right away the social aspect of disease became critical, and many of the successes and failures of the international response hinged on how social factors were addressed.

Q: What is involved in diagnostic access?

Hallas: My first public health internship was with a group called Pathologists Overseas, and their focus was improving access to diagnostic testing around the world. Diagnostic testing is the first step to nearly any health intervention you could think of. A patient can't get access to treatment without first getting a test, and governments and public health officials can't respond to a disease that they don't know is there. But there are still millions of people who live with, and die of, diseases whose names they will never know. Diagnostic access refers to ensuring that people have the ability to get timely, effective testing when they are ill or to manage existing disease. Diagnostic care isn't something most of us think about much, so I was really motivated when I learned how common this problem was. I wrote my undergraduate thesis on diagnostic capacity and the WHO's new Essential Diagnostics List, and I am currently writing a *BMJ* Opinion piece about how lack of global diagnostic capacity is hurting the coronavirus response.

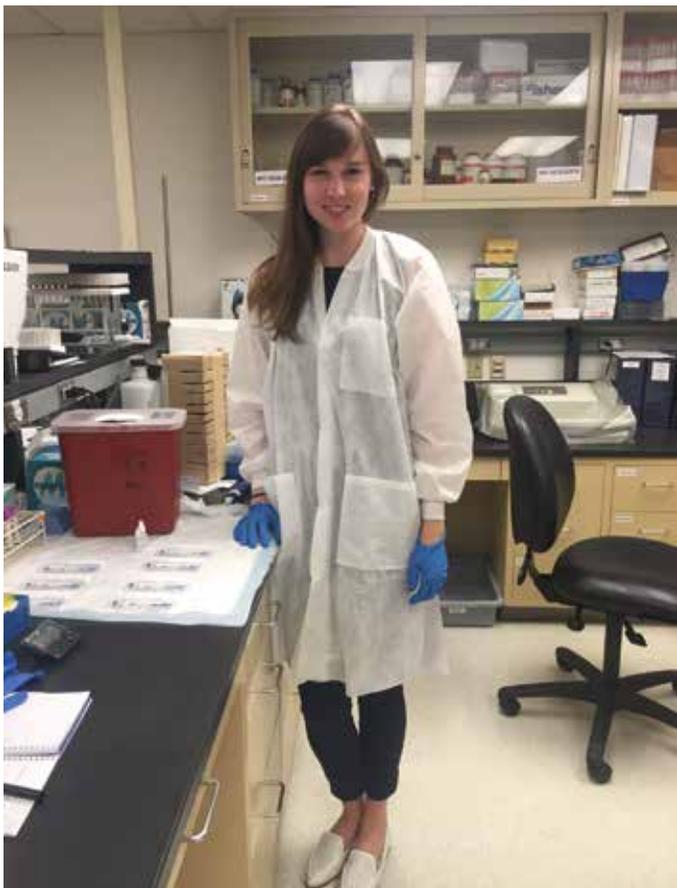


Ebola virus in human blood.

As a woman from Texas, the issue of adequate sexual health education and contraceptive access is even more fundamental to my experience. I remember approaching my high school principal and state representative about trying to get a sex ed curriculum that had a message beyond "abstinence." I basically got laughed out of the room. I got even more into this issue in college where I took classes in reproductive health rights and got a clearer view of just how poorly Texas treats women. We lag behind in basically any reproductive health measure you can think of, whether it's contraceptive access, abortion access, maternal mortality, PrEP access for HIV prevention, the list goes on. I have written a lot on these issues, and will continue to advocate for them in the future. For the most part in reproductive health, we know what works, but political and legal barriers are stopping people from accessing the care that they need. While it's not something I am researching here in London, just being able to talk to my classmates from around the world about reproductive healthcare issues in their countries has really widened my view of the possibilities when governments protect reproductive health.

Q: As you think journalistically, what are the important issues today that people should know about? What is the right medium for dissemination of this information? Why do you think that print media can work as a modern-day niche?

Hallas: I really do believe in the ability for journalism to improve people's lives and bring attention to issues that would otherwise go unmentioned. There are certainly many challenges to journalism right now, from outdated ad-revenue models to an unfair lumping together of all "mainstream" media. But I think that the newspapers and news magazines that we call print journalism will always have a unique role in its ability to dedicate resources to the breaking stories that require investigation and skill to interpret findings. This doesn't mean just the *New York Times* either. Local and regional papers are the experts on the communities that they cover and do an incredible job keeping local leaders accountable. One study showed that the presence of local journalism can save towns millions of dollars because banks are more comfortable giving lower interest rates to communities with papers, as they will keep local officials accountable to their use of funds.



But while print journalism is shorthand for the high-quality investigative work that most of us are familiar with, I don't think that this means we must be tied only to a printed page. The *Texas Tribune* is a great example of a news site that never had a printed page, yet runs some of the most significant investigative work in Texas, as a non-profit, no less. For on-paper papers like the *Dallas Morning News* and *New York Times*, I think that their printed product is turning more into a luxury good that people want for the experience of reading something physical, while most of their hardest-hitting work is disseminated online and through social media. So overall, I don't think that print media will ever really fade at the highest levels, just take on different forms.

Q: Are you more interested in specific diseases like Ebola or more general issues of disease?

Hallas: I have thought a great deal about whether there is some specific disease or issue to which I would like to dedicate myself. At different points I have focused on diagnostic care, reproductive health, HIV, and Ebola. But I think that more than specific expertise in only one issue, I am interested in improving the mechanisms of health systems, which are transferable between diseases. For example, I am studying Ebola by researching people's views of military involvement in the response, which also applies to other infectious disease outbreaks where a branch of government may step up to provide services.

Q: What exactly is global health law and policy? Are there any standards shared between countries in the area of medicine?

Hallas: Global health law is rather a nascent field in comparison to humanitarian or human rights law, but it refers generally to the international agreements and laws that govern how we respond to disease threats. For example, the International Health Regulations coordinates the international response to infectious disease threats, and the Framework Convention on Tobacco Controls is an international law concerning tobacco product advertising that has been used in national-level lawsuits against Big Tobacco. These laws exist alongside other UN goals that most of us are more familiar with, such as the Sustainable Development Goals and human rights legislation. Global health law is largely carried out at the WHO/UN level, though individual governments such as the US are hugely influential in setting precedent in their involvement with global health. Law touches nearly every part of health, from constraining harmful advertising to regulating trade of medicines to protecting the rights of people in quarantine. Thankfully, there has been an increased recognition of the place of law in improving global health systems and strengthening the ability of individual countries to respond to threats and build more sustainable capacity.

The world's experience thus far with COVID-19 has clearly illustrated the importance of evidence-based global health law and policy. I am incredibly grateful to be studying at LSHTM at this time and to have the chance to help support the response. I am currently helping the UK Public Health Rapid Support Team in their work supporting Africa CDC to form evidence-based policies. Specifically, I am helping to code and analyze public data to assess how non-pharmaceutical interventions such as social distancing and movement restrictions are playing out on the ground to inform policy better. COVID-19 is exposing gaps in our current global health governance systems, from worries about the effectiveness of the International Health Regulations, to abuse by military and police in the name of quarantine enforcement. The crisis is far from over; what we know about the COVID-19 response right now is merely a first draft of history. But there is no doubt that this epidemic will fundamentally reshape the way in which we see the world and how we attempt to govern. Hopefully this will result in some change for the better.



Image credit: Andy Dean Photography/istock.com

Jeremy Ratcliff ('19)

Know thy Enemy: Mutating Viruses to Understand Pathology

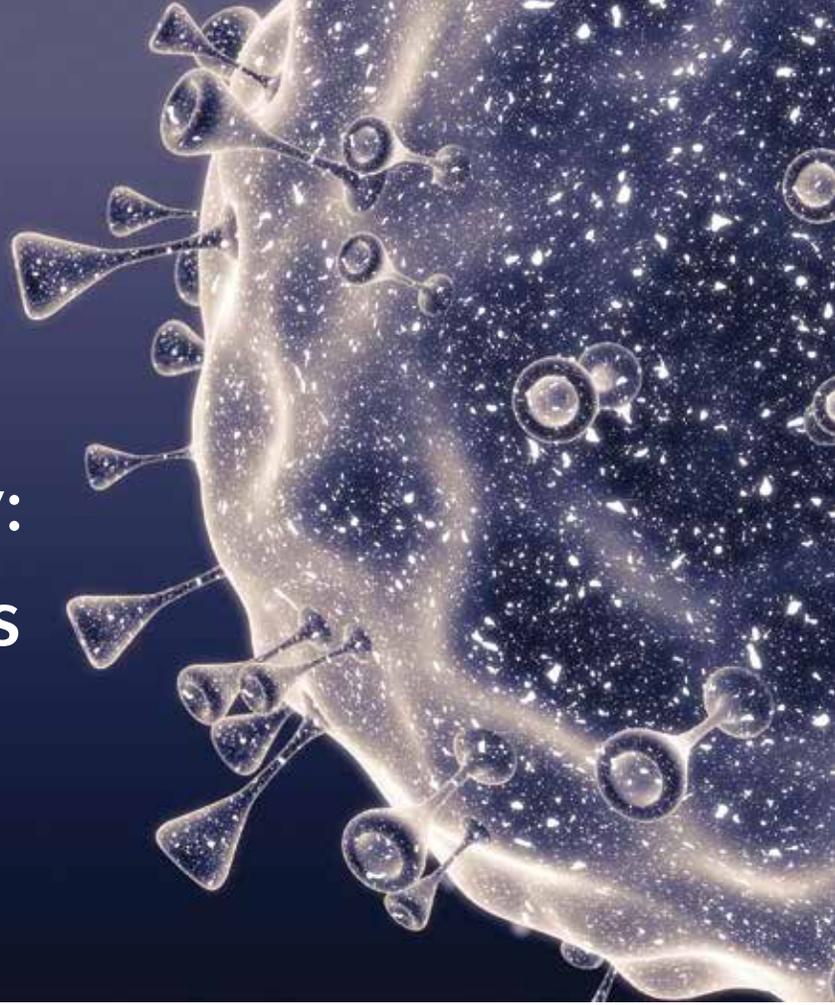


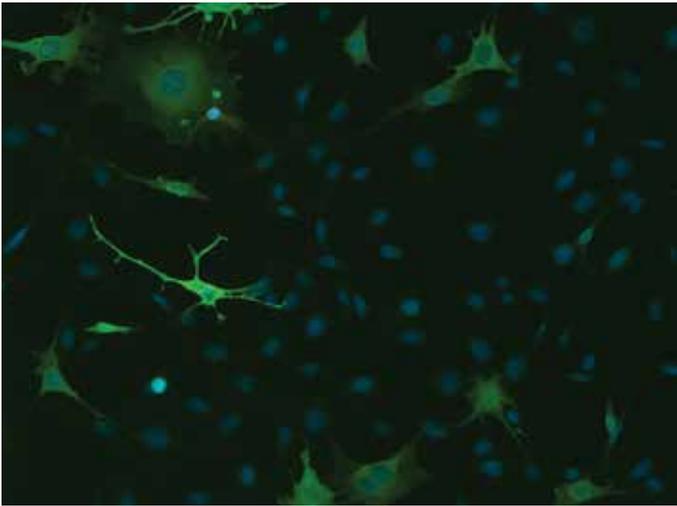
Image credit: galmaetorok/bigstock.com

Pathogenic microbes, tiny organisms such as bacteria, viruses, fungi, and protozoa that can cause infectious disease, have circulated in animal populations and coevolved with eukaryotic organisms since before humans walked the earth. Considering the influence of infectious diseases on the structure of society over the 11,000 years since the agricultural revolution, we only recently began to understand microbiology. It was not until Louis Pasteur's studies of fermentation in 1878 that infectious diseases were even recognized as being caused by living beings too small for the eye to see. The following 140 years have seen remarkable progress in our understanding of microbiology and pathogenesis, and the field is being revolutionized by rapid technological advancements in the fields of molecular biology, structural biology, genomics, epidemiology, computational biology, and artificial intelligence. Still, our ability to limit the morbidity and mortality of infectious diseases is frustratingly slow.

While global efforts have had some impressive success in recent years, there is cause for concern when looking at the data under a microscope. According to the World Health Organization's Global Health Estimates, the number of disability-adjusted life years (DALYs – a quantitative measurement of morbidity and mortality caused by disease) lost to infectious diseases has decreased 43% from 2000 to 2016. Unquestionably that is a win for humanity, but that statistic in isolation is masked by the fact that almost three-quarters of those gains are tied to decreases in only four diseases (HIV, diarrheal diseases, measles, and malaria) for which we have

effective antivirals (HIV), vaccines (measles, and hopefully soon HIV), or for which the acute effects are productively ameliorated by programs focused on health access and health system strengthening (diarrheal diseases, malaria). Over the same period, the DALYs lost to dengue and hepatitis C, viral diseases for which we do not have effective vaccines or treatments, increased by 171% and 11%, respectively. Furthermore, the structure of the global economic system intrinsically ties financial insecurity and infectious disease incidence together. About 49% of the world population lives in countries designated by the World Bank as low- or lower-middle-income, but 88% of the infectious disease burden is within these communities. As described by Professor Matt Bonds of Harvard University, the two phenomena (poverty and poor health) are linked in the cycle of poverty and infection. Poverty increases the risk of becoming sick through multiple mechanisms, and sickness can likewise drive economic instability. For no disease class is this truer





Mouse Embryonic Fibroblast cells infected with Minute Virus of Mice (MVM) and stained with virus protein antibodies (green and red). Nuclear DNA stained with DAPI (blue) to illuminate the nucleus.

than with infectious diseases, which for millennia have been the diseases of the destitute.

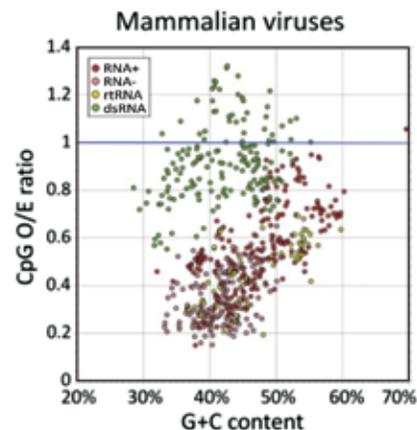
Ratcliff ('19) imagines a future where infectious diseases are so inconsequential to society that they no longer trap families in poverty. At Johns Hopkins University, Ratcliff majored in molecular biology and public health studies while becoming acutely aware of the challenges facing the disadvantaged in Baltimore's urban neighborhoods. Chasing his interests in global health, Ratcliff traveled to Antananarivo, Madagascar, during the summer of 2017 to serve as field research coordinator on a project with Dr Matt Bonds, Dr Jeff Freeman, and others validating a novel tuberculosis diagnostic designed for use in resource-poor areas. There, his most formative experiences came in coming face-to-face with the destabilizing nature of endemic infectious diseases. While his primary research was on tuberculosis, the failures in diagnosing, treating, and managing diseases for which there are no prophylactics or medications grew to be his biggest source of frustration. After returning to Hopkins and continuing his coursework with a laser focus on using infectious disease control as a tool for social justice, Ratcliff realized that many of the failures in vaccine and antimicrobial design are due to a flawed and incomplete understanding of microbial pathogenesis. Recognizing that climate change, increased urbanization, and the rise in intra-state warfare will all contribute to increases in the incidence of a vast number of neglected tropical diseases (far more than can be studied in a timely-manner using the current research paradigm), he realized that a more complete framework for understanding the drivers of infection and pathogenesis will be necessary to inform research and public health practice in the near future.

To move towards a more advanced understanding of the molecular determinants of infection, Ratcliff has joined the lab of virologist Dr Peter Simmonds at the University of Oxford, where he is reading for a DPhil in Clinical Medicine. In his work, Ratcliff uses a mixture of bioinformatic and experimental biology approaches to investigate the impact

of virus composition on virus replication and pathogenicity. Rather than focusing on viral proteins, Ratcliff studies the genomes of those viruses to investigate whether the means by which information to produce protein is stored, rather than the protein itself, has an impact on the outcome of infection. Specifically, Ratcliff and the Simmonds Group investigate the evolutionary pressure underpinning what he refers to as the CpG problem.

The CpG problem was born from numerous bioinformatic studies that demonstrated that mammalian cells suppress the frequency of the dinucleotide 5'-Cytosine-Guanine-3' (CpG) in their genomes. This phenomenon is attributed to the activity of DNA methyltransferases, a protein class that can indirectly increase the number of C→T mutations in the host DNA. These changes can be inconsequential in organisms thanks to a biological trick called degeneracy, wherein some changes to genes are silent and do not alter the proteins encoded by that gene, so the phenomenon of CpG suppression was long thought to be a neutral effect of DNA methylation. This thinking changed in 2013 when Dr Simmonds reported a similar bias against CpG in RNA viruses. RNA viruses, which almost never migrate to the nucleus and are thus never exposed to DNA methyltransferases, lack a mechanistic explanation for suppression of the dinucleotide, suggesting that other evolutionary forces were at work. Over many years of investigation, the Simmonds lab has demonstrated that increases in CpG dinucleotides in RNA viruses cause substantial virus attenuation and decreased viral fitness across multiple virus model systems. The presumed effect of the CpG dinucleotide is through an unknown, dose-dependent mechanism that increases the cell's ability to recognize the virus infection and promote an antiviral state within the cell.

Ratcliff's research will further characterize the CpG problem. By generating mutants of a single species of virus with increased and decreased frequencies of the CpG dinucleotide (and all else about the virus being held equal), he will investigate the effect of CpG on the ability of a virus to infect,



Suppression of CpG dinucleotide in viruses that infect mammals. O/E is a statistical measurement of the level of suppression. Values less than 1 (under blue line) demonstrates a value less than would be expected given no bias. O/E = Observed/Expected. Courtesy of Simmonds, P. et al. (2013).



Jeremy Ratcliff in Antananarivo, Madagascar, during the summer of 2017

replicate in, and kill a cell. In using cell lines that have been treated with the CRISPR-Cas9 system to knock out certain proteins, he will be able to identify the proteins and pathways involved in the attenuation phenotype. With proteomic and transcriptomic data from infected cells, the downstream mechanisms underpinning the antiviral state can be identified. These investigations will be completed concurrently and will provide information for better understanding of why increasing CpG motifs in the virus genome decreases the ability of the virus to replicate. Ratcliff will be generating mutants of arboviruses, which are viruses that infect both insects and humans and include the highly pathogenic microbes yellow fever, dengue, and Zika, which collectively kill 50,000+ people worldwide every year. The research will have two tangible benefits: improving vaccine design and influencing our general understanding of virus evolution.

Vaccines are prophylactic treatments that help prevent people from developing infectious diseases. Vaccines work by exposing an individual to a weakened or partial version of a pathogen (plus some other components) to train the immune system to detect and destroy that pathogen at a much faster rate than would be achieved naturally. Unfortunately, vaccines are really hard to perfect, and most vaccine trials fail. One of the more difficult aspects of vaccine design is that the pathogen has to be presented to the immune system in the same way as in a natural infection, or the immune system will fail to be activated when a natural infection occurs. One method to ensure that a presentation mimics the natural pathway is to use a live version of the germ that has been attenuated so the immune system has an easy job fighting the infection and developing a memory response. The MMR and chickenpox vaccines are examples of live, attenuated viral vaccines. The CpG problem presents a clear path for generating better live, attenuated vaccines; increasing the CpG content of live viruses incapacitates their ability to replicate in cells but does not limit the generation of a memory response when tested in a mouse model. Further characterization of the CpG phenotype will inform future vaccine design and may result in phase I clinical trials in the near future.

Investigating the genomics of viruses also opens up avenues to increase our understanding the barriers to virus evolution. Hollywood enjoys painting viruses as rapidly mutating bastions of pestilence that can jump from species to species in the blink of an eye. While there are some elements of truth to this, the ability of a virus to survive and replicate in any given host is constrained by many factors including receptor use, innate and adaptive immune defenses, and cellular translation machinery and cytoskeleton assembly. The work on CpG demonstrates an additional constraint on virus evolution, limiting the ability of viruses to modulate their genomes freely when evolving to infect a new host species or escape the adaptive immune system (as influenza A, the causative agent of flu, does every year). Sequencing data for novel zoonotic viruses could take advantage of the way CpG suppression is a proxy for species optimization and could be used to predict viruses that are at the greatest risk of jumping the species barrier and infecting humans. These data can also be used to track whether certain viruses are becoming more infectious or pathogenic over space and time, and allow for more accurate prioritization of public health programming.

If society is to achieve poverty eradication within our lifetime, the risk and burden of infectious disease in these communities will need to be substantially reduced. In the future, public health challenges associated with infectious diseases are likely to get worse before they get better. Parallel to the rise of antivaccine sentiment allowing previously eradicated diseases to transmit regularly in select Western societies; climate change and urbanization will be a double-edged sword that will drive tropical diseases such as dengue and yellow fever into immunology-naïve populations. A more robust framework for understanding neglected tropical disease evolution and developing therapies against these pathogens will be an essential component of the next phase of public health programming.

Molecular Biology Primer

- All life on earth stores its genetic information using a code of nucleic acids. In DNA, the code is comprised of nucleotide bases that we label by A, T, C, or G. In RNA, these bases are A, U, C, or G, and the U is a tit-for-tat replacement for the T.
- Similar to binary code in computer science, the sequence of bases encodes information that guides the production of proteins. Three bases in a row (e.g. CGA, TTA) encode an amino acid, which are the building blocks of proteins.
- Proteins are the workhorses of the cell and carry out almost all of the essential functions for the cell to survive.
- In eukaryotic organisms (such as humans), genetic information stored as DNA in the nucleus is used to transcribe RNA that migrates to the cytoplasm where it interacts with cellular machinery to create proteins.
- Viruses are parasitic nucleic acids that infect cells and subvert the host cellular machinery in order to make more copies of themselves. This infection ultimately results in the death of the cell (in most cases). This is bad for the host organism.

Joy Schaeffer ('18)

Growing with Yoga

Interviewed by Stanley Chang ('91)

Joy Schaeffer is a current Marshall Scholar who previously attended the United States Military Academy at West Point.

Q: Tell us about your Marshall studies and how you acquired a yoga certification.

Schaeffer: I am doing two masters at King's College London, researching human trafficking from two different frameworks: rights-based and security/intelligence. I did my first year in the International Child Studies MA researching child agency in child labor/child trafficking. I am currently in the War Studies' Intelligence and International Security MA and will be writing my dissertation on the role of intelligence in anti-trafficking.

When I arrived in London, I decided to use my Marshall Plus money to join the KCL Yoga and Pilates Society. As a long-distance runner, I felt that I was lacking in flexibility and balance, so yoga seemed like a good way to work on those aspects of my fitness. I have also struggled with an eating disorder in the past, and yoga had been a beneficial way of engaging and reconnecting with my body at the sporadic classes that I had attended previously. The classes through KCL were so enjoyable that I signed up for a retreat with my instructor

near the Seven Sisters in Sussex. While there, I discussed yoga teacher training with her. I thought that doing a certification during my time in the UK would be a neat way to engage my mind and body, become more involved in the KCL yoga society as a teacher, and learn a skill that I could possibly use as physical training when I finish my Marshall and return to the US Army as an military intelligence officer.



Q: To get a certification, what kind of teacher training did you do? Where did you do it?

Schaeffer: As a Christian interested in yoga, I chose to pursue certification with a Christian yoga training organization with the goal of teaching faith-based yoga classes in my faith community. I also wanted to be certified with a broader international yoga organization, so I chose YogaFaith, which is recognized by the Yoga Alliance. YogaFaith offers distance learning with immersion trainings to gain a 200-hour teacher certification. So I did a good portion of my training and reading online and then attended immersion trainings to learning the hands-on aspects of teaching.

They also offer various specialty trainings to supplement the immersion training week. I chose to do a Trauma Sensitive Yoga certification as my specialty training because it connects with my research, as anyone who experiences trafficking will have trauma and anyone working in anti-trafficking is susceptible to vicarious trauma. Furthermore, I will likely be working with many people who have PTS in my future in the military. I felt that a holistic understanding of trauma and how it impacts the body would be beneficial. This specialty training was deeply impactful to me. One of my favorite parts was reading the book, *The Body Keeps the Score*, by Bessel van der Kolk, one of the foundational researchers of PTS. His book helped me understand trauma at a much deeper level



Beach yoga



Eight angle pose



Headstand

and included evidence-based research on how yoga can be beneficial to those recovering from trauma. I would highly recommend the book to anyone whose work might involve traumatized populations.

Q: How many yoga classes do you teach? How many people come? Are they mainly students or also professors?

Schaeffer: I only teach one weekly yoga class—5pm on Monday nights at King’s College London Guy’s Campus if anyone is interested! It is open to all, but is almost always just King’s students. I have had classes with anywhere from 6 students to 30 students. I also sometimes lead small groups of friends in free yoga classes, and would love to teach yoga at the Marshall Conference this year if anyone attending is interested. :)

Q: Do you teach iyengar or hatha or vinyasa? Or something else? How do you choose the type of yoga to practice?

Schaeffer: I teach a mix between power and vinyasa yoga for the beginner-intermediate level. I generally begin with breath work and stretching to prepare for an engaging session

in which people feel physically challenged and sweat a bit. Then we always close off with more stretching and a savasana (resting) posture, so that people leave feeling energized.

Q: Do you try to emphasize the meditative part of yoga?

Schaeffer: Meditation definitely plays a role in our sessions, but I don’t pretend to be an expert in it. I do teach in a very trauma-sensitive style which incorporates mindfulness centered around noticing physical sensations in the body (known as “interoception”), as many people with trauma are unable to feel physical sensations due to the survival response of the body to traumatic experiences. Other meditative aspects incorporated include focusing on the breath, encouraging students to choose an intention for the practice (such as gratitude, hope, positivity), and incorporating a mindset of non-attachment with regards to the especially challenging poses where we might notice fatigue or shaking muscles but not become attached to those sensations and instead return to a focus on the breath.

Q: What yoga poses do you like the most? Do you have a yoga pose that you yourself are trying to achieve?

Schaeffer: My favorite yoga poses are hip-openers, such as the cow face, fire log, pigeon, and lizard poses. I appreciate how they help me get out of my normal range of motion that I used in long-distance running. I also really like practicing arm balances because it’s really exciting to see how fast progress happens when you practice them regularly, so they are huge confidence builders. I would love to get to the point where I can hold a handstand more than a few seconds without losing balance!

Q: What do you hope for your students?

Schaeffer: My hope for my students is that our yoga sessions are spaces in which students are able to relax, reconnect with their bodies, feel empowered and challenged to their own level of comfort, and learn to incorporate an attitude of mindfulness and gratitude in their daily life.



Image credit: MalikaStock/bigstock.com

John Lu ('19)

Ending Neglected Tropical Diseases

Interviewed by Stanley Chang ('91)

Image credit: brk/bigstock.com

John Lu is a current Marshall Scholar at the University of Cambridge interested in developing vaccines against neglected tropical diseases.

Q: How did you become interested in neglected tropical diseases (NTDs)?

Lu: I owe it to an inspiring upperclassman, Phil, who sparked my interest in NTDs when I was a freshman. Every summer for years, he had worked on schistosomiasis control programs with a particular Tanzanian NGO, and that year, he was looking for more students to join him. I ended up stumbling upon his work a month into undergrad through a link in the comments section of a post in a Facebook group I happened to join. It's funny how life works out sometimes.

At that point, I had never heard about schistosomiasis before, but I was appalled to learn that over 200 million people were infected from this waterborne parasite. After doing some fact checking and more background reading, I asked myself: if not me to start devoting time to ending NTDs, then who? If not now then when? That night, in addition to emailing Phil, I emailed a WHO Collaborating Center in China that focused on schistosomiasis asking if I could work there over the summer.

One never responded, but the other did. The next semester, I did a short research project for a class exploring the potential use of citizen science to expand research on NTDs, and a few months later, with grant money and IRB approval in hand, I went to Tanzania with Phil and another Duke student to implement a research-driven humanitarian aid project exploring the effectiveness of the Tanzanian NGO's schistosomiasis control programs that we had designed in collaboration with the NGO.

Q: On Wikipedia (sorry) I found a website for NTDs. There are evidently around 15 of them. Which ones are you planning to study?

Lu: I'm a virologist by training (I worked on Epstein-Barr virus during undergrad, and now I study HIV), so dengue virus would be the natural starting point. But I find myself more intrigued by the parasitic infections schistosomiasis and hookworm. Like schistosomiasis, hookworm also affects hundreds

of millions of people globally, and the economic impact of hookworm infection is well established. One retrospective economic analysis of children in the American South found that childhood hookworm infection reduced adult wages by forty percent. Further, the impact of hookworm infection on school attendance rates is also well established through randomized controlled trials (which led to Michael Kremer's recent receipt of the 2019 Nobel Prize in Economics for experimental economics). A vaccine for hookworm and/or schistosomiasis would quite literally be, to quote Peter Hotez, "anti-poverty vaccines." The one caveat is that I know very little about the basic science of parasites, but I guess that's what medical school and a PhD are for...

Q: Why are these diseases neglected? Is it because more effort is being placed in combatting HIV or malaria?

Lu: Your answer is spot on. "Neglected tropical diseases" as a public health term really came about from a public relations exercise in the early 2000s in response to Millennium Development Goal #6, which vowed to "combat HIV/AIDS, malaria and other diseases." Researchers working on "other diseases" realized they needed better branding, so they came up with the aptly named catch-all term "neglected tropical





diseases.” In the two decades since then, the name has stuck: PLoS has a dedicated journal for NTDs, and the World Health Organization has a Department of NTDs.

Q: I understand that in the last few decades, the US has made great strides in providing cures and medication for rarer diseases. Did these advancements have any effect in countries suffering from NTDs?

Lu: Here’s a cheeky answer: the US (primarily Texas) suffers from the NTD Chagas disease, which causes many cardiovascular complications. So, yes, US advances in curative therapies are indeed impacting the NTD-suffering country of the US! In fact, this highlights a surprising (and equally troubling) phenomenon: at least one-half of the world’s neglected diseases occur among the poor living in G20 countries and Nigeria.

But to answer your question, it depends on what you mean by medicines for “rarer diseases.” If you mean medicines for NTDs (despite the very high global prevalence of NTDs), then they have indeed been deployed rapidly, especially since the early 2000s. For instance, the USAID launched a NTD control program in 2006 at the behest of Barbara Bush (W’s daughter), and since then they have delivered over 2.6 billion treatments (which is simultaneously a lot, but also not that much considering this covers nearly 14 years and these diseases collectively impact over 1 billion people globally, many of whom have multiple NTDs and can get reinfected).

The discovery of ivermectin back in the 70s and 80s for the NTDs river blindness and lymphatic filariasis even earned William Campbell the 2015 Nobel Prize in Physiology/Medicine. But what is often left out of Campbell’s story is that ivermectin was first developed to treat worm infections in horses.

The first dedicated drug development for human NTDs really began with MSF’s Drugs for Neglected Diseases initiative (DNDi), which as a piece of historical trivia was initially funded using money from MSF’s 1999 Nobel Peace Prize.

Q: Have there been any NTDs which have been promoted to non-NTDs?

Lu: No NTDs have been promoted to non-NTDs, and WHO’s official NTD list grew in 2017 by a few diseases. One NTD though is on the verge of being eradicated: guinea worm disease. It’s this super gruesome (though rarely fatal) disease

that causes worms to grow out of your skin. There’s no cure, and the only treatment is to extract the worm by wrapping it around a stick. This traditional treatment is supposedly memorialized by the Rod of Asclepius, which is a universal symbol of medicine. Thanks to community-based education and behavioral interventions, guinea worm has been almost eradicated for about 20 years, and Jimmy Carter was awarded a Nobel Peace Prize in 2002 in part for the Carter Center’s role in the guinea worm eradication campaign.

Q: Why don’t these diseases proliferate in the US or Europe? Is it a matter of hygiene? Or weather? Or biomass? Many of these diseases seem to proliferate because of the presence of bugs and worms.

Lu: Some of these diseases are in the US and Europe. Historically, many were endemic in the US South, including hookworm. Hookworm’s decline in the US South during the early 20th century can be attributed to a number of causes, including the Rockefeller’s hookworm eradication campaign, the rising expectation that homes have outhouses, and the migration of laborers from farms to factories.

Q: If I went abroad and returned with an NTD, would it be curable in the US? (I guess it depends on the NTD!) I’m just curious to know whether there are no treatments at all, or whether the sick people in these countries have no access to these treatments.

Lu: Treatments exist for many of the most prevalent NTDs, and these drugs are being dispersed on the mass-scale in countries impacted by these diseases through aptly named mass drug administration campaigns. DNDi has developed or is developing drugs for many of the less prevalent NTDs. Many of these drugs are not commercially available in the US, but you can almost certainly get them from the CDC.

Q. The idea of “sickness” is a fascinating topic. How did evolution insert sickness into our physiological make-up, and why do our bodies cure themselves in some cases and not in others?

Lu: I love how the human body is full of contradictions. My favorite example is cancer, which ironically is an individual cell’s quest for immortality.



The Joy of Words

By R. Allen Shoaf ('70)

I'm sure we've all noticed and benefited from a common feature of language. There are often two, and sometimes many more, different words for the same thing or the same experience — just think, weather!

One case in point, which interests me in this column, are the two words listen and hear. I'd like to share with you my reflections on these two words as they have developed and matured over the many years I've been writing poetry.

Hear is such a delightful word! English gives us the name of the organ, ear, inside one of its words that describes the action the organ performs and fulfills. This, of course, is an accident of phonological history. Still, what could be more convenient or pertinent or pleasant? The other word, listen, is perhaps more opaque, but, if so, it still has a lot to teach us if we want to understand and appreciate English.

We might begin by asking just what is the precise difference between the two words. Does one word communicate something that the other does not? Or does it communicate a shade of meaning that makes it effectively a necessary party or competitor to the understanding that the other communicates? As you have perhaps heard others sometimes say, you can hear without really listening.

This idea repays consideration. We as speakers of English feel that there is a kind as well as a degree that is differentiated between these two words. It is not just that one is "more" or "better" than the other but that it is also in some way a substitute for the other. To be sure, this feeling may be vague in most of us most of the time, but I imagine that most speakers of English think of listen as different in some such way from hear. As a writer of poetry, I am fascinated by this distinction, which I have myself heard throughout my life, and I'm drawn to wonder if there may be, let's call it for the moment, some accounting in the word itself for the distinction. Certainly, I readily acknowledge that someone can say, well, it's just a convention, after all. But, then, as I learned long, long ago, we can say that about almost any dimension of language — not much information there, or, information that is only episodic, local, and difficult to raise to the level of concept or idea. So, although I do acknowledge that, I do not set very great store by it.

I am, of course, well aware that many, often very distinguished historians of language disparage inferences from etymology. It is one thing to know the history of a word for purposes of determining its phonology and morphological development. It's quite another to mine the history of a word for some sort

of occult or divinatory meaning. The latter practice deservedly meets with little favor. And I'm not interested in it in this column.

Rather, I am interested in facts of etymology that can be admittedly narrated poetically to tell a story of understanding. In other words, I happily acknowledge that I'm not practicing any kind of science but precisely working in poetry, out of the conviction that this work may help us see and better appreciate what English can do with the two words hear and listen.

To my knowledge, it is generally agreed that the verb listen derives from proto-Indo-European (unattested but posited) *kleu, which is assumed to mean "to hear." This etymon gives rise to many different words which include Old English hleor, meaning "the cheek or the face," i.e., that part of the head which is "near the ear." This is, so far as I know, basic knowledge considered factual as far as we now understand.

At the same time — as all readers of Shakespeare, especially, will know — one form of listen is list, now obsolete but used commonly in earlier centuries to mean hear or hearken (see, inter alia, *Antony and Cleopatra* 4.3.10). Now it is just at this moment that I begin myself to experience the joy of words.

English knows the word list also to mean the tilting or the leaning to one side of a great sailing ship, almost certainly in peril since it is listing. To my knowledge, this usage is of unknown origin. I'm not here interested (nor am I qualified) to pursue the origin of the word. What arouses my imagination and compels my desire to share these considerations with you is that, whatever the origin, the action of the listing of a ship, presumably damaged or otherwise under stress, wavering from side to side, yields a story of listening as it differs from hearing.

If we imagine listening in the context of a ship listing, we can also imagine turning the cheek, the side of the face where the ear is located, toward the person or process which is calling on our attention. In short, listening is not unlike being in peril, being wounded, being floundering, being at risk, being out of control, being in a situation where the other, however mysterious and weird it may be, makes pressing demands upon us. Listening asks a lot. Listening hurts.



The story of listening hurting arises out of the fascination of a poet with homophony and the cross-fertilization of words. Strictly speaking, the story is not historical. It is, however, ethical. And as ethical, it helps us to see that the difference we feel between hearing and listening, howsoever it may also be conventional, may owe something as well to the inexhaustibly rich associations of words with the human body, as in ear and cheek

and our sides. We go along every day hearing all sorts of things. But to really listen requires concentration, attention (with its inevitable tens-ion), and a commitment of will to acknowledge the other. It is probably too much to say that it is a version of “turn the other cheek,” but it is not too much to say, I think, that listening is fundamentally a turning of the cheek (and perhaps a lowering of the head) in a practice of humility.

Donna Stoering ('75): The Healing Power of Music

By Diana Coogle ('66)

By way of introduction to pianist Donna Stoering, I'd like to describe two moments from her Marshall Scholar years at York University, the first because it testifies to the talent and genius that have been the foundation of her career, and the other because it shows something of the inner person, from whom that career emanated.

(1) With concerts booked in various European cities while she was in England, twenty-year-old Donna Stoering, with BA and MA degrees in music already in hand, arrived for her studies at York as a Marshall Scholar early in September, 1975, before term started. She was practicing piano in the Music Building when Professor Wilfrid Meller OBE walked past. He stopped, listened, remembered what he knew about Donna from her Marshall Scholar bio, and in a twinkling she had been offered a faculty position as head piano teacher in the Music Department at York. Of course, that wasn't what she was supposed to be doing, as a Marshall Scholar, but, to her eternal gratitude, the Marshall Scholarship board agreed to let her take the position if she were simultaneously working on a degree in music. So, in addition to being a faculty member at York University and playing concerts throughout Great Britain and Europe, Donna earned an MM in performance during her two-year Marshall Scholarship.

(2) As many Marshall Scholars can attest, life in a foreign country can sometimes be lonely, maybe especially for Donna, whose young age made socializing difficult, who was the only Marshall Scholar in that part of the UK, and who traveled frequently to give concerts and lectures. Visits from other Marshalls curtailed loneliness, as did, especially, visits from Geraldine Cully, whom she calls “a beloved mother figure to us all.” But her inner resources were her best ally. She found comfort and inspiration at the campus pond, with its ducks and serene atmosphere, a scene “very evocative for a musician and composer,” she says. She especially loved to walk to the chapel of a cloister in York for the 6:00 a.m. service, when the early-morning dark enveloped her, the stars glittered overhead, and the beautiful chants from

the chapel floated on the chill air. “It is one of my most powerful memories,” she says now.

These two aspects of Donna Stoering, her amazing talent and her deep emotional and spiritual nature, intertwine throughout her career. She had been a concert pianist since she was five years old (talent), yet she never thought of music as a career because what she really wanted to do was help heal people (heart), so,

turning down the opportunity of a scholarship at Juilliard, she became a pre-med student at San Jose State University. She continued touring the country as a pianist, and as she did, she began to notice how many times people came to her after a concert and said, “Something in your playing touched my soul and healed me”—a man whose wife had passed away, someone who was ill, a young woman struggling with depression. So at last Donna said, “Okay. I get it. Music can heal people just as much as medicine can,” and, switching her major to music with a minor in sociology, she set the tenor of the rest of her life. The touchstones of her career have all sprung from this interaction between healing, spirituality, and music.

For instance #1: Lecture-recitals

When Patrick Henry, a Minnesotan and past Marshall Scholar, met Donna Stoering at a trans-Atlantic think tank for Marshall alums in Washington, DC, he was so impressed with her that he invited her to give a lecture-recital at the College of St. John's, focusing on spirituality in contemporary classical music. “I leapt at the chance,” she says. She interviewed 30 major composers from around the world, many of whom had written pieces for her. For those interviews she created an eight-page questionnaire asking about the interrelationship between music and spiritual beliefs: whether the composers felt





Donna Stoering (center) with Winnie Wong playing a Chinese guzheng (left) and Anna Maria Mendieta on Latin harp (right) at one of LFL's Notes for Nourishment concerts in Charleston, South Carolina

that those beliefs had an impact on what they created, if they felt that the spiritual beliefs of audience members influenced what they heard in the piece, and how the spiritual beliefs of the performer might make a difference to what the audience heard in the music. Many of the responders composed a piece of music in answer to a question. Donna found the answers, whether written or musical, moving and powerful.

These questionnaires were the basis not only of lecture-recitals (TEDx talks, NPR, BBC, and other broadcasts) but also of Donna's first publication, *Spirituality in Contemporary Piano Music*, which has gone through four printings. The answers from the composers made her think about the power of what musicians do. "Undeniably," she says, "there is a huge link between one's spiritual awareness, the growth and impact of our caring, and the music—and lyrics—we listen to."

This link has been studied in the field of neuroscience, which has delved into the connection between sound and healing. The physics of sound, which explains how sound travels and makes changes in the brain, was the cornerstone of Donna's 2014 TEDx talk, in Livermore, California, in which she discussed how the kind of music we listen to affects our relationships. "It's the music itself that puts the meaning of the words way down deep," she says in the talk. "I wonder how much of our ability to listen [to each other] has to do with how we listen to music."

For instance #2: Listen for Life

In 1998, after going to "a lot of strange countries" as an artistic ambassador (officially for the UK, informally for the US), Donna returned to her home in London and started a nonprofit organization, Listen for Life, with Peter Collins, an Oxford mathematics don with a passion for classical music and opera. As an artistic ambassador (in which capacity she was glad of her sociology minor in college), she had performed, hosted, or produced programs about music on national television in many countries. What she was aiming for was an alternative to MTV

with classical music and international artists. Again and again, wherever she performed, people recognized her from her TV appearances and approached her, saying, "You have to help us."

Some of these people were young adults, 20 years old or so, who watched her program and became interested in the classical music that she presented. "We were raised on MTV," they would say. "But we want what you gave us. MTV plays rubbish, and we're not being fed. Please. Get nourishing content to us." What they wanted was the presentation style of MTV with classical music.

Other people, who were older, said to her, "I'm a parent and furious with my country for allowing MTV into our media. It has corrupted our kids, who were raised not to use this language and not to dress like wearing nothing and not to be uninterested in their own background and traditions." Donna couldn't stop MTV, but she felt she could provide an alternative—a fast-paced presentation with better music.

A third category of person was the musicians who told her they were giving up. She was astonished. After thousands of years of musical tradition, why would they give up? "Because of global media," they replied. "It's destroying our ability to pass on our culture and music to the next generation. As music masters we would take a child with the gift to learn and raise that child in our homes to absorb everything we knew. We have no other way to pass on our culture."

"Now we have TV in our village halls and homes. Our children see MTV and then no longer care about the didgeridoo and drum beat that have been in our tribe for centuries. They care about what will get them on TV and make them cool with their peers. They refuse to sit at the feet of the master. When our generation dies out, our knowledge dies with us. Therefore, we might as well give up. The village won't care for us because we're not important any more. We now have instruments that no one alive knows how to play."

Profoundly moved by what she was hearing, feeling the impulse of "do something for us!" from so many people in so many cultures, Donna felt that although these issues had nothing to do with classical piano or her career, she could not ignore the crisis. "If the young kids saw us coming to their village with cameras, recorders, and note pads to interview their music masters," she thought (her healing-with-music thought gears turning), "they would begin to have respect for their musicians. They would realize, 'Someone cares about our music.'" With those ideas as a starting point, she and Peter Collins founded Listen for Life, and Donna, primarily at her own expense, started filming and interviewing musicians around the world to keep those musical traditions alive.

By 2005 Listen for Life had over 300 hours of award-winning proprietary content for use in television, film, radio, DVDs, and online video series featuring music masters to inspire the next generation—and all listeners—to see the value of music for changing people's lives.

For instance #3: Travels with Music

Once Donna Stoering had put in motion her understanding of music for healing through Listen for Life, she turned the concept of "healing" in another direction: education, meaning not education about music but music as an educational



Backstage before the first LFL Sound Collectors show in Hollywood: guzheng master Winnie Wong from China (left), Donna Stoering (center), and Keshav Batish from India (right)

tool. Music, she thought, could be used in every subject—sociology was an example—both to help students with learning the subject and to broaden its scope. Not one to let an idea languish, she made a pilot for TV, which became *Travels with Music*, “a multimedia exploration of world cultures, with music as your guide,” as the website puts it. *Travelswithmusic.com* offers thirty units for the classroom (K-12, homeschool, and after-school and youth groups), covering musical traditions in fifteen countries. “*Travels with Music* won tons of awards,” Donna said. “It was shown on BBC, Russian stations, and other networks.” Then, suddenly, the recession of 2008 destroyed the financial footing of their major investor, and the bottom dropped out of the project.

Undaunted by this setback and driven by Donna’s vision of helping people through music, Donna and her husband sold their house to launch *Travels with Music* on their own. “This is amazing content,” Donna says. “It’s not in HD and looks somewhat dated, but what the musicians are saying is earth-shattering, especially now because of migrant issues.”

In doing interviews with musicians all around the world, Donna has collected some deeply moving stories for *Travels with Music*. For instance, an Iraqi Jew who plays an oud says, “When I play music together with someone from Syria, Iraq, Lebanon—countries that are fighting each other—we share one language, one soul. There is no border.” A woman in Pakistan tells about risking being stoned for singing in public as a young woman; she now teaches music and singing to young Pakistani girls. In Senegal, a griot explains that the music master in a village gives each baby born in the tribe a drumbeat “name” that matches its heart and its soul. The drumbeats have been passed down for generations, so that the current

music master can drum the “name” of everyone who ever lived in the village and call them all back for celebrations.

“These people shared these stories with us,” Donna says, with a touch of awe in her voice. “They gave us the right to use their music—not Sony or some other company, who might rip them off. They trusted us.” *Travels with Music Series One* currently has a half-hour segment on each of fifteen cultures. Donna’s goal is to have the music traditions of at least 130 different cultures represented in an online series, perhaps curated in a “wiki” format.

“School administrators have told us that bullying goes down by 80-90% when students experience *Travels with Music*,” Donna told me. “When the bully sees this other student’s tradition on the screen and recognizes it as great music, the formerly bullied person suddenly feels cool and can say, ‘That where I’m from!’”

“These stories, this content, could be so useful right now in the global dialogue,” she continues. “If I could do anything before I die, it would be to get this content, so valuable for our understanding of each other, shared in some way.”

The educational aspect of Donna’s work now also includes an educational game design, called *Harmony Quest*, that challenges students to identify a master musician of another culture within one mile of the student’s house—a banjo player in Appalachia, for instance: someone who has a story to tell of his or her culture. “It’s all about telling stories of people through their music,” Donna says. “It’s a window into the soul of these cultures, to see them not as ‘other’ but as equally as exciting and rich in tradition as any music the student might be familiar with.”

With *Harmony Quest*, as with all her endeavors, Donna’s vision is big. It requires corporate sponsors or investment funding, but it stems, again like all her endeavors, from a heartfelt sense of how music can help build a better world. “We want to challenge people to find musicians with stories and videotape them. Anyone is welcome to do that. With this content, we can have a global, user-based encyclopedia of music from all over the world, filmed by everyone, curated by us. The musicians of the world could be influencers, just as



Donna Stoering directing a segment of an LFL Sound Collectors show that she produced at the Ford Amphitheater in Hollywood, combining renowned USA blues and rock band members with famed musicians from India and Vietnam



Donna Stoering (right) with the founder of Alzheimer Services of the East Bay, for which Listen for Life has created and funded music therapy programs and sound hearing experiences



Donna Stoering (left) at a Notes for Nourishment concert in California with opera superstar Frederica van Stade, who is turning pages for Donna for a particular song, prompting Donna to say she had the most famous page turner ever

much as politicians, government bodies, and pop icons. We need that music and tradition and wisdom more than ever.”

Donna Stoering is her own example of musician as influencer. In addressing United Nations agencies, she has spread the word about using music in conflict resolution, cultural diversity training, health and wellness issues, and international education initiatives.

For instance #5: And continuing

Donna says that for its first seven years Listen for Life was like MADD for music. “The purpose of MADD was to raise awareness of drunk driving,” she says. “Our main mission was initially to raise awareness of music’s power and potential and to recognize that we’re facing a climate-change moment: the musical climate is changing, and we’re going to lose these cultures if we don’t work to keep them.” Listen for Life’s focus was on helping musicians tell their stories and saving their cultures.

Then the analogy shifted, from MADD to the International Red Cross: music to help anyone in crisis or need. Now the focus was on creating a variety of projects or programs that use music to address important issues in the world. Now Donna, through Listen for Life, was creating new music festivals around the world, bringing musicians from different countries to improvise and play together, and attracting listeners from diverse cultures and demographics to share the experience. “The countries could be at war,” Donna points out, “but the musicians are not.” A 2012 Listen for Life concert in Carnegie Hall, for instance, titled the Power of Eight, brought eight musicians from eight cultures on eight instruments at 8:00 p.m. and featured, in the second half of the program, Listen for Life artists from Palestine, Syria, Israel, and Iraq.

The most recent years of Listen for Life have focused on Notes for Nourishment, a program in which renowned artists donate their time and talents to perform free one-hour concerts, which, in turn, garner donations to benefit a nonprofit service organization, chosen by the performers. For example, the

Piccolo Spoleto Festival, in Charleston, South Carolina, invited Donna to launch a new Notes for Nourishment series with them in spring 2019. Listen for Life artists from Israel, Asia, Latin America, Europe, and the United States flew to Charleston (at Donna’s expense; there wasn’t time to apply for grants) to play fifteen concerts, in the eight days of the festival, that Donna produced, hosted, and performed in. The artists raised thousands of dollars through donations for Charleston-based nonprofit organizations that serve disabled veterans, children with cancer (and their families), music and art therapy programs, the hungry, the homeless, and people suffering the effects of hurricanes and flooding.

Now, after twenty-two years of existence, Listen for Life is again shifting with the changing world. The needs of the organization are different, in this digital world, from those early days when Donna, on one exhausting concert tour after another, would speak during or after a concert about the need for Listen for Life programs. Looking back on those twenty-two years, Donna says,

“I realize that all along—whether we were helping musicians to save their cultures or producing Travels with Music to help musicians tell their stories or creating new cross-cultural festivals to bring musicians of warring factions together—the actual mission has been to serve and meet the needs of musicians while inspiring them to serve others rather than spend their musical talent solely for elusive fame and fortune.

“My goal for this next year,” Donna says, “is to find a few energetic, driven, music-passionate people [she hints that they could be recent Marshall alums] who have their own vision for one of the LFL projects, or for the mission and organization itself, and would like to carry things forward in their own way and their own time, under the LFL banner or in a new name entirely. If just one reader of this article contacts us to volunteer or think about leading Listen for Life into the future or be a corporate sponsor of Travels with Music so we can distribute that to schools and orphanages worldwide, I will be eternally grateful.”

Donna Stoering’s entire career has been centered around the healing aspect of music—personally, for our society, for the world. Her medical-student impulse to join the healing arts is the drive behind her biggest passion: to get people to listen to music, “all music, any music; to listen for the life-giving properties in the music; to listen their whole lives; to listen to new things; to become enriched through listening broadly.” Her projects, whether concerts or organizations, have all had one goal, one lofty, empowering goal: “To inspire and enable musicians of all cultures to use their gifts in the service of others.”

And yet she sums up her life with one simple statement. “It’s been an interesting existence,” she says mildly, seemingly unaware of this egregious example of litotes.

For further exploration of Donna Stoering’s work, look at: DonnaStoering.com, ListenForLife.org, TravelsWithMusic.com, NotesForNourishment.blogspot.com, and ListenForLife1 (one of the LFL channels on YouTube). Search for “Donna Stoering TEDx” to find the YouTube version of the TEDx talk in Livermore. Or contact Donna through LinkedIn or Facebook or by email: dstoering@gmail.com.

MARSHALL SCHOLARSHIP CLASS OF 2020



Rose Asif
New York University
Goldsmiths, University
of London



Diego Atehortúa
Rutgers University
University of Cambridge



Zachary Bailey
United States Air Force
Academy
King's College London



Kristen Barrett
University of Virginia
University of Oxford



Amar Bhardwaj
Columbia University
University of Edinburgh



Evan Binkley
University of Michigan
The School of Oriental
and African Studies



Andrew Brown
Princeton University
University of Oxford



Isaac Cui
Pomona College
London School of Economics
and Political Science



Claire Evensen
University of Wisconsin
University of Oxford



Mustafa Fattah
Stanford University
University of Cambridge



Praveena Fernes
Tulane University
The School of Oriental
and African Studies



Avital Fried
Princeton University
University of Oxford



Claire Garfield
Stony Brook University - SUNY
University of the Highlands
and the Islands



Kristian Gubsch
Washington State
University
University of Sheffield



Erin Hartman
University of
Pennsylvania
University of York



Christian Hoffman
United States Naval
Academy
University of York



Olivia Holder
University of North
Carolina Chapel Hill
University of Oxford



Mary Hood
United States Air Force
Academy
Imperial College London



Young Joon Kim
Columbia University
University of
Cambridge



Chloe King
George Washington
University
University of Edinburgh



Dylan King
Wake Forest University
University of Cambridge



Talya Klinger
MIT
University of Cambridge



Kyra Kocis
Georgetown University
University of Sussex



Sally Matson
Georgetown University
University of East Anglia



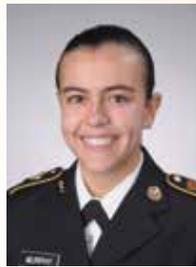
Lynne Mooradian
United States Military Academy
University of Cambridge



Michaella Moore
Howard University
The School of Oriental and African Studies



Emma Morgan-Bennett
Swarthmore College
Goldsmiths, University of London



Bethany Murphy
Syracuse University
University of Bristol



Sarah Pearl
Dartmouth College
University of Reading



Andrew Pregnall
Virginia Polytechnic Institute and State University
University of Leeds



Troia Reyes-Stone
Brandeis University
University of Oxford



Ryan Saadeh
Brown University
The School of Oriental and African Studies



Lawson Sadler
Baylor University
University of Sussex



Aaron Sandoval
University of Florida
University of Cambridge



Katherine Scheibner
United States Air Force Academy
University of St Andrews



Erica Scott
Stanford University
University of Edinburgh



Margaret Siu
University of Texas, Austin
University of Oxford



Christina Steele
University of Pennsylvania
University of Edinburgh



Emily Steffke
Michigan State University
University of Oxford



Samuel Stuart
University of Kansas
University of Oxford



Anne Sutton
University of North
Carolina Chapel Hill
Royal Academy of Music



Thomas Sweeney
Indiana University
London School Economics
and Political Science



Michael Tormey
Northeastern
University
University of Leeds



Steven Truong
MIT
Imperial College
London



Clara Wicoff
Kansas State University
University of Oxford



Leia Yen
UCLA
King's College London

Photos: Scholar submissions
Background photo: Exflow/bigstock.com

Marshalls & Rhodes Reunion

On Monday, January 13, SF region Marshall Scholars in the healthcare and investing space gathered in San Francisco with local Gates and Rhodes scholars at a reception organized by Bay Area Rhodes Scholars to coincide with the annual JP Morgan Global Health Care Conference.

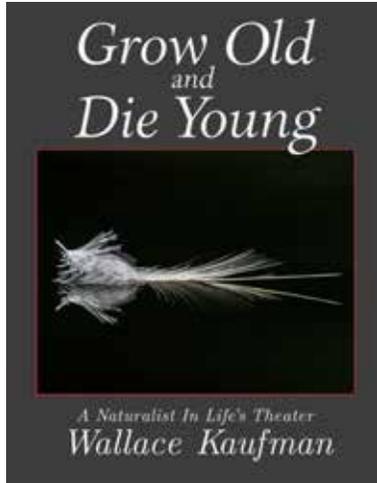
There was a great Marshall turnout at the Rhodes reception during the JP Morgan Conference. The Marshall attendees included Ben Heineike, Wheaton Little, Claire Clelland, Alexander Oshmyansky, Alex Rau, David Chacko, and Jacob Chacko.



From Left to Right: David Chacko, Jacob Chacko, Alex Oshmyansky, Clair Clelland, and Ben Heineike

1961

Lois Potter (Cambridge), who became a UK citizen in November 2019, hosted Marshall classmate **Wallace Kaufman** (Oxford) in early October. Potter, well known among Renaissance literary scholars for her Shakespeare biography and her many articles and editions of dramatic works, continues to participate in many parts of the UK's literary life. Kaufman had emerged from his solitary wilderness home in Oregon to attend a wedding in Portugal and to visit friends in the UK. Kaufman says he felt like an octogenarian Tarzan finding himself "suddenly in the physical and cultural jungle of a great city surrounded by all the best and worst that civilization has created." Potter, he says, gave him only the best, from food to theater, beginning with her weekly full-day rounds reading poetry to patients in the 12-story Royal Free Hospital. With Dr. **Cindy Sughrue**, OBE (Sheffield '85) they attended a Welsh opera company's performance of *Elixir of Love* in a pub theater. Potter secured coveted tickets to Read But Not Dead's performance of a newly discovered Restoration play performed for a small audi-



ence at Gray's Inn, one of four Inns of Court and a venue in which Shakespeare himself once performed. Potter even assigned Kaufman a role in an adaptation of *Merry Wives of Windsor* read by professional actors and scholars at Potter's home. Kaufman said he was "appropriately assigned the role of old Shallow, father of an even shallower suitor."

Kaufman is back on his land in coastal Oregon, where he has finished a new book, an illustrated memoir, now titled *Grow Old And Die Young: A Naturalist In Life's Theater*, set for publication by spring 2020.

1966

Diana Coogle (Cambridge), got married (first time!) on May 18, 2019, in a fabulous wedding on the Applegate River. Mike Kohn was the groom. Diana made her bridal entrance in a canoe. She also completed doing 75 things of 75 repetitions each for her 75th birthday (read 75 books and magazines, jumped rope 75 times for 75 days, did 75 hikes and skis, hiked 75 miles, wrote 75 poems of 75 words each). She started a food blog



Andy Schapiro with his wife, Tamar; daughter, Galia; and son, Alex, in San Francisco

(foodaspoem.blogspot.com) in addition to posting weekly on her regular blog at dianacoogle.blogspot.com.

1985

Andy Schapiro (Oxford) and his family returned to Chicago in 2017 after three years in Prague, where he served as US Ambassador to the Czech Republic dur-



Mike Kohn and Diana Coogle



Lee Coogle, Diana Coogle, Isaac Stephens, arriving at the wedding site

IN MEMORIAM

Jeffrey “Jeff” Robert Melius Kunz (’71)

January 6, 1949 to April 1, 2019

On April 1, 2019, fellow Marshall Scholar of the class of 1971 Jeffrey “Jeff” Robert Melius Kunz (Glasgow and UCL) passed away while attending a meeting of his fraternity Sigma Phi in Madison, WI. Jeff was born in Milwaukee, WI on January 6, 1949, and was raised in Riverside, IL. Jeff attended the University of Wisconsin for his undergraduate degree and while there not only received high academic honors, but was active in student government and numerous student organizations, including his beloved fraternity Sigma Phi and the student union. Throughout his studies, he was awarded numerous academic scholarships that afforded him the opportunity not only to study abroad but also to establish life-long friends throughout the world. These scholarships included the Brittingham Viking Organization’s Reverse Viking Scholarship, where he studied at the University of Oslo in Norway, and the Marshall Scholarship, which enabled him to study at the University of Glasgow in Scotland and University College of London in England from 1971 to 1973. He continued his studies at the University of Wisconsin, obtaining both a doctorate in medicine and a master’s degree in administration in 1977. Jeff completed a medical residency at Northwestern University in Chicago, IL, in physical medicine and rehabilitation and a fellowship in health administration. This led to a successful career in healthcare, including roles in higher education, public health, government, journalism and administration. Some of the many notable

achievements of Jeff’s career were being elected a Fellow of the National Academy of Medicine, awarded the first Morris Fishbein Fellowship in Medical Journalism at JAMA, and receiving best-seller awards for three American Medical Association books.

Jeff was passionate about his alma mater, his local and state communities, and the larger community of mankind. For example, Jeff served as Assistant Dean of the University of Wisconsin–Madison Medical School and as a member of the executive staff of the UW–Madison chancellor, as the state health officer for the State of Wisconsin and advisor to three state governors, as well as Vice President of Rehabilitation of the McGraw Medical Center at Northwestern University and President of Midwest Health Systems. He remained highly active in the Brittingham Viking Organization, Madison Torske Klubben, Sigma Phi, Wisconsin Union Trustees and Association of Marshall Scholars, where he served on the regional selection committee and as the class of 1971 secretary. Jeff was a life-long learner, who loved to travel and spend time in northern Wisconsin at his lake home near Minocqua. He is survived by beloved wife Lawren of 46 years, three daughters Kristin, Karin, and Kathrin and their families.



ing the second Obama administration. As a political appointee, his term ended with the completion of the term of the President who appointed him. The posting in Prague was particularly meaningful to Andy because his mother was born there in 1934 and came to the US as a refugee with her parents in 1939 after the Nazis invaded. To have served in the land of his mother’s birth as the representative of the country that saved her life was the experience of a lifetime. Andy has rejoined the law firm of Quinn Emanuel Urquhart & Sullivan, and his teenage kids have been enjoying the easy availability of Hot Cheetos and re-learning how to make sense of weather forecasts in Fahrenheit.

1993

Teresa Lowen (SOAS) is in the midst of moving chaos, but it is for an exciting career move and it involves moving back to the UK! She is going to be in the Cambridge area by the time you read this and will be looking to connect with other Marshall Scholars, be it mentoring current scholars or collaborating and socializing with alumni.

1999

Stacey Smith (Birmingham) tied the knot this past summer with her partner of several years, Lance, a fellow lover of



Stacey Smith



Landon Lee Brauns, son of Emily Heikamp

parents to Clyde (14), Calvin (11) and Veronica (10), all of whom are in NYC public schools.

2005

Landon Lee Brauns has arrived! A healthy baby boy was born to **Emily Heikamp** (Oxford) and Berto Brauns on Saturday, January 25, at 10:58 a.m. Mom, dad, and baby are all doing well. Both sets of grandparents were able to come to Boston for the birth, and they have been offering much help and support.

2006

Dan Weeks (Oxford) and his wife Sindiso Mnisi Weeks (Rhodes '05) became officially outnumbered with the arrival of their third child Landa last summer, a young man endowed with his mama's smile and papa's elongation. Big sibs Khaya and Zwelo are thoroughly entertained/ing and rocking their Zulu-German-English skills (the joys of a trans-continental union). When not caught up in cooing or diapers, Dan keeps busy as a Director of ReVision Energy (an employee-owned Benefit Corp leading New England's clean energy transition) and with a smattering of boards and progressive political causes in New Hampshire. One of these years, he even plans to don the Oxford gown and graduate, an excuse to take the kids punting and maybe link up with some old Marshall peeps?!

2008

Michael Barany (Cambridge) reports that he is back in Edinburgh for the foreseeable future as Lecturer in the History of Science, in the same department he studied in 10 years ago.

Katie Huston (Sussex) is proud to share that she has taken a new job as Chief Operating Officer of Nal'ibali, a national reading for enjoyment campaign in South Africa, and she is even more pleased to share that she is expecting her first child in July!

2009

Sam Kleiner (Oxford) got married in New York City in October 2019. He and his wife, Laura Temel, enjoyed a honeymoon full of hiking and kayaking on New Zealand's South Island.



Dan Weeks, his wife, Sindiso, and their children, Khaya, Zwelo, and Landa

terriers and badminton. She and Lance both lived in Madison at the same time she was doing her PhD at UW, but they did not meet until years later when both had moved to Boulder. Stacey continues to work as a professor of evolutionary biology at CU Boulder and travels to visit her wonderful study system (plants in the tomato family) whenever she can.

After serving as Managing ('09-'13), Deputy ('13-'18), and Special Features Editor ('18-'20) of this newsletter, **Ushma (Savla) Neill** (Sherfield Fellow, Imperial College) will be stepping down from the newsletter team, as she embraces public school politics in New York City. In August 2019, Ushma was appointed by Manhattan Borough President Gale Brewer to the Community Education Council for District 2, the school board representing the largest school district in a school system that serves over 1.1M students. She is currently pushing HPV-vaccine initiatives and helping to coordinate the community response to supporting students in temporary housing during the COVID-19 school recess. Ushma is also the Vice President of the Office of Scientific Education & Training at Memorial Sloan Kettering Cancer Center in New York, and Editor-at-Large for the *Journal of Clinical Investigation*, where she acts as chief interviewer for the video series *Conversations with Giants in Medicine*. She and her husband Rolf are



Vinayak Muralidhar and family

Emma Wu Dowd (UCL) lives in Austin with her husband Jason and two kids, Rosie (3) and Owen (1). Both work at UT Austin to improve education for Texas students.

2010

The Class of 2010 has been growing! **Vinayak Muralidhar** (Oxford) and his wife Sheila welcomed a baby girl in October 2018.

On 22 February 2020, **Tanya Goldhaber** (Cambridge) cemented her own US-UK special relationship by marrying Ben Thomas, a fellow Cantabrigian and lifelong Brit. They met through their shared hobby of competitive ballroom dancing, which Tanya picked up during her scholarship. They will continue living in London, but with frequent trips across the pond.

Carrie Barnett (SOAS) got married in December to Bálint Horváth in a small ceremony in Vonyarcvashegy, Hungary, overlooking Lake Balaton. Fellow Marshall **Jess Lanney** (LSE) made the trip to Hungary to attend, and she and Carrie

added the Hungarian parliament to the UK, Scottish, and Northern Irish ones on their growing list of “parliaments toured together.” Carrie and Bálint will also celebrate their marriage in the United States in September in Carrie’s hometown of Chapel Hill with other Marshall friends in attendance. Carrie recently returned from fieldwork in Morocco for her PhD in political science at Princeton, and she looks forward to finishing up her degree.

Aroop Mukharji (LSE and KCL) also got engaged over the last year to Valerie Eisenson, and, like fellow Marshall Carrie, currently occupies the curious interstitial space of having been married in a ceremony abroad (in New Delhi) but not yet married in the United States. What are we, Carrie! Married, or not, or both?! He is also hoping to finish his PhD this spring, which has also felt like something in between engagement and marriage.

Joshua Bennett (Warwick) additionally got engaged earlier this year and has a pair of new books coming out this year: *Owed*, a collection of poems that will be published by Penguin Books; and *Being Property Once Myself*, a work of literary theory that will be published by Harvard University Press and was recently chosen as the winner of their 2019 Thomas J Wilson Memorial Prize.

Last, but certainly not least, **Austin McKinney** (LSE) reports a major professional update. After spending a couple of years in the private sector in Boston, Austin is excited to start a new career as a Foreign Service Officer, with his first assignment in Mexico. Austin looks forward to his return to full-time public service.

2012

After completing two years in the UK as a 2012 Marshall, **Christina Chang** (Imperial) completed her PhD at Harvard in Physical Chemistry, during which time she invented a new, scalable method to make next-generation solar panels more cheaply. She is now traveling in Latin America working with sustainable technologies and would love to hear from any Marshalls who would like to meet up in the region! Out of the lab, she is one of the leaders of the MIT Outing Club, where she teaches students how to rock climb, hike, and enjoy the outdoors safely.



Christina Chang

To the Editor:

In Stanley Chang's article "Ayanna Thompson: Race in Shakespeare," in the Fall 2019 Marshall Scholar Newsletter, the line "Damn Jews. They ought to all be clustered away" is attributed to the character of Launcelot in Shakespeare's *The Merchant of Venice*. This line is actually spoken by a character named Launcelot in an absurdist satire called *A Shylock by Edward Einhorn* (Theatre 61 Press, New York 2005). I do not believe it appears anywhere in Shakespeare's work. I hope you will be able to correct this misunderstanding.

Jim Bernhard

Marshall Class of 1959

Rice University BA, University of Birmingham MA in English Literature

Join the Class Notes Team

The Marshall Alumni Newsletter team is currently looking for additional class secretaries (including potentially covering multiple class years) to ensure that all classes are fully represented. If you are interested in volunteering for this role, please contact us at newsletter@marshallscholarship.org.

Contact Nell Breyer (nell.breyer@marshallscholars.org) with any questions about membership, profile updates, address changes, or annual dues.

Further information is also available on the AMS website at marshallscholars.org or by calling +1-917-818-1267.



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