
Move out of your comfort zone

Once in a while it's important to move out of your comfort zone and pivot. Failing to do so can be costly.

Learning a new skill

The onset of the COVID-19 pandemic brought with it a wave of suffering, death, and widespread disruption owing to lockdowns and a breakdown in normal social interactions. Intriguingly, its impact extended beyond human societies, affecting wildlife in unforeseen ways.

In [Koh Ped](#), a beautiful island near Pattaya in Thailand, [long-tailed macaques](#) (*Macaca fascicularis fascicularis*) had grown dependent on being fed by the tourists that visit the island daily. The pandemic, however, brought a sudden halt to tourism, leaving these macaques in a precarious position. Accustomed to easy meals provided by visitors, the macaque population, artificially inflated by tourism, had to quickly adapt to this new reality. They did that by learning a new skill.



[Long-tailed macaque *Macaca fascicularis*](#). Source: [New Scientist](#).

My own encounter with these fascinating creatures occurred on a trip to Langkawi, Malaysia. Here, my partner Saskia Hogenhout and I observed a troop of long-tailed macaques, deftly led by a distinct female, moving from room to room in our hotel, testing door locks, and

smartly raiding minibars for nuts while meticulously avoiding chocolates and liquor. On our first night at the hotel, we didn't lock the patio door and the macaques managed to get inside in the early morning. The memory of waking up jet-lagged to the sight of juvenile macaques eyeing me guiltily from the minibar will always remain vivid in my mind.

Back on Koh Ped, the macaques displayed remarkable adaptability. Faced with a severe shortage of their usual food source, [they developed a novel skill: using stones to hammer open rock oysters](#). This technique, observed for the first time within this particular macaque population, marked a notable discovery. The emergence of such behavior, previously unrecorded before the pandemic, underscored the macaques capacity for adaptation. With this newfound skill, the Koh Ped macaques joined an elite group of only five other nonhuman primate populations known for their use of stone tools. This is a rare phenomenon. But when it did emerge, the new skill likely played a critical role in the survival of these macaques during a period of disruption. Adapting to a changing environment by learning new skills is a lesson for all of us.



[Stone-tool use behavior in the Koh Ped long-tailed macaques \(*Macaca fascicularis fascicularis*\). Muhammad et al. 2023.](#)

Meet the moment

In recent weeks, I was inspired by reading “[Big Bets: How Large-Scale Change Really Happens](#)” the book of [Dr. Rajiv Shah](#). The book takes us on a journey through Dr. Shah's impactful career, which spans from his time at the Bill and Melinda Gates Foundation to his role as the USAID administrator under the Obama administration, and his current position as President of the Rockefeller Foundation. His achievements are made even more remarkable considering his background as a son of first-generation immigrants. Dr. Shah candidly shares that as he ascended in the ranks of philanthropy and government, he noticed a scarcity of people of color in these spheres.

One key lesson that Dr. Shah emphasizes is the necessity to pivot. In our current era, marked by chaos in various domains such as the economy, societal changes, and technology, he highlights that agility is crucial. According to Dr. Shah, being agile is the only way to stay ahead of both the risks and opportunities that arise, thereby maximizing one's capacity for impact.

Listen to Dr. Shah's wise words:

When I hire now, I look for people who are ready to meet the moment, who are creative, passionate, and as eager to learn as they are eager to create change. But mostly, I'm looking for those people who are eager to do what it takes to face the challenges of this century, which are not only complex but fluid, requiring agility in individuals and institutions alike.

This issue is perhaps even more pertinent for immigrant scientists. In these instances, [the bar is often set higher, and it's not sufficient to be just as good as the next candidate to secure a job or a promotion](#). If you're an immigrant scientist, you have already demonstrated the ability to pivot from studying or working in one country to another. You can build on that experience to make a case for your capacity to adapt to change.

Move out of your comfort zone: A tale of Dutch ladies

I observed a prime example of how stepping out of your comfort zone can advance scientific research through the work of my Dutch expat colleagues, [Esther van der Knaap](#) and [Saskia Hogenhout](#). Like myself, they were both beginning their faculty career at Ohio State University back in the early 2000s. Esther and Saskia are now both star plant scientists.

[I've always wondered if their career trajectory would have been the same had they remained in the Netherlands](#). But I'm digressing. Perhaps it's a topic for a future post.



Sophien Kamoun  @KamounLab · Oct 29, 2016

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Dutch plant scientist stars! Would they have had the same career if they stayed in NL? [#womeninsci](#) [#womensci](#)



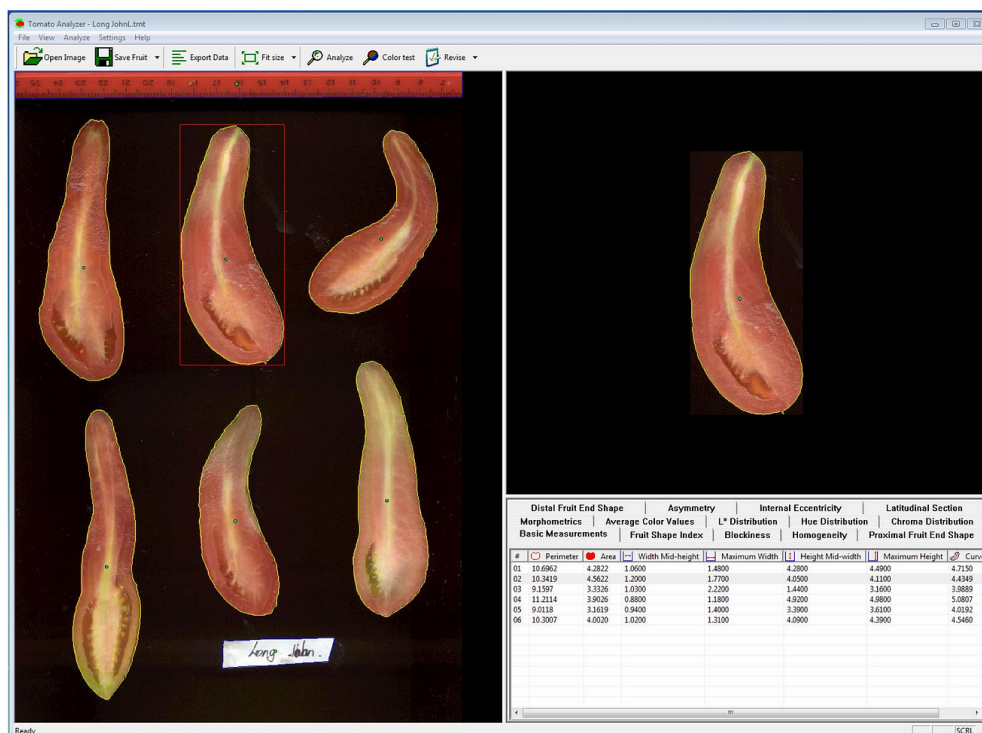
[Dutch plant scientist stars! Would they have had the same career if they stayed in the Netherlands?](#)

Let's start with Esther. She is a plant geneticist and molecular biologist who focuses on the fruit shape and size of tomato and related vegetable crops. She recognized the need for a more rigorous method to quantify fruit phenotypes, which required engineering and computational expertise beyond the typical skill set of a biologist and geneticist. Undeterred, Esther bravely stepped out of her comfort zone and embraced novel approaches to achieve her goals. She and her team adapted scanners to meticulously document tomato fruits and developed mathematical methods to analyze the data. This was accomplished by forming a network of collaborators from diverse backgrounds, including a collaboration with a Honda engineer who contributed to software development. She also worked with undergraduate students from the Applied Methods and Research Experience (AMRE) at the College of Wooster to further develop the method.

[Esther van der Knaap](#)

[Dr. van der Knaap is a plant geneticist and molecular biologist. In September 2015, she moved her program to...www.plantbio.uga.edu](#)

The outcome was [Tomato Analyzer](#), now in Version 4.0, which can process slices of tomatoes, peppers, leaves, and seeds. This may seem routine by today's industry standards, but developing such a tool in an academic setting in the early 2000s, with students and a computer engineer, was quite a feat. Certainly, it was beyond the conventional expertise of a plant geneticist.



[Tomato Analyzer 4.0.](#)

One challenge when stepping out of your comfort zone is that when you venture into the fields and methods of others, many people will become defensive rather than welcoming the diversity of research. Esther's meticulous work led to the identification of [the genetic basis of the mutation "sun," which controls elongated fruit shape in tomato](#). She discovered that sun is a retrotransposon-induced gene duplication, a type of structural variant that was unheard of in plant genetics in the mid-2000s. Some initially dismissed Esther's findings as incorrect.

However, time has told, and we now know that many plant functional loci are indeed underpinned by some form of structural variant. In tomato alone, besides “*sun*” (transposon plus gene duplication), there are examples like “*fas*” (an inversion that disrupts the promoter of CLV3), “*fw11.3*” (a large deletion in the gene that created a gain of function allele), and “*fw3.2*” (a near-perfect duplication of several genes, including the one affecting fruit weight).

Esther continues to follow her scientific curiosity wherever it leads her. She is now delving into structural variation underlying volatile production in tomatoes, investigating the genetics of aroma and volatiles in ripe tomato fruits. This marks yet another venture beyond the traditional boundaries of genetics into the realm of biochemistry.

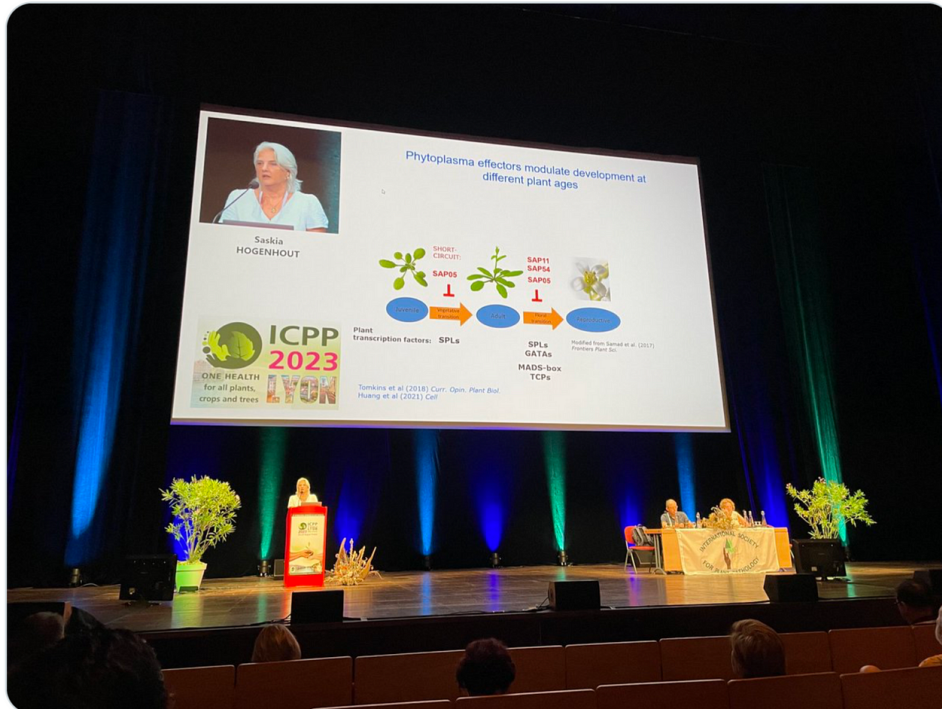
I witnessed a similar drive in my partner [Saskia Hogenhout](#), now at the John Innes Centre, who has continually reinvented herself over the years, never hesitating to step out of her comfort zone to explore new biological systems and approaches. Despite her original Ph.D. training being in virology, she ventured into the genomics of bacteria (phytoplasmas) at a time when prominent scientists advised against studying unculturable microbes. Ignoring the skeptics, she took the leap, sequenced phytoplasma genomes, and, through a chance encounter at a conference, collaborated with a startup company to tackle the challenging bioinformatics.

Saskia’s lab has since identified new classes of phytoplasma virulence proteins and [uncovered astonishing biological mechanisms](#), culminating in [a remarkable structure of the complex between the bacterial protein SAP05 and its host targets](#).



Nick Talbot
@talbotlabTSL

The remarkable SAP05 effector can hijack the plant juvenile-to-reproductive phase plant developmental process by inducing a novel form of proteolysis of transcriptional regulators - a complete reprogramming of morphogenesis @SaskiaHogenhout #ICPP2023



[The remarkable phytoplasma SAP05 effector can hijack plant development.](#)

Saskia's career also exemplifies a lesson in the optimal level of specialization. Her work spans diverse fields including plant pathology, plant biology, molecular genetics, microbiology, and entomology. She is equally comfortable studying the molecular mechanisms of bacterial virulence as she is at researching plant responses to aphids, essentially following the science wherever it leads her. While she has kept a focus on tripartite plant-microbe-insect interactions, she has avoided hyper-specialization, whether in terms of experimental systems or methodological approaches. "[Don't hyperspecialize](#)" is sound career advice; you never know what will be useful in the future. Yet, it requires the flexibility to pivot and reinvent oneself periodically.

There must be something in these daring Dutch women that emboldens them to follow their scientific curiosity wherever it leads. This trait isn't universal but serves as valuable lesson for us all. Moving out of your comfort zone isn't easy or straightforward, but you don't want to be the scientist who learns one method early on and spends their entire career applying it repetitively.



“If all you have is a hammer, everything looks like a nail.” Source: [ChatGPT](#).

How to pivot

Moving out of one’s comfort zone can be particularly challenging for scientists, who often specialize deeply in their fields. However, pivoting and embracing new challenges is essential for growth and career development. Here are some tips for scientists looking to make such a transition:

- **Explore interdisciplinary research:** Engage with fields adjacent to your own to discover new applications for your expertise and widen your perspective.
- **Network beyond your field:** Participate in conferences, workshops, and seminars outside your immediate area of expertise. These can offer fresh insights and foster opportunities for collaboration. Collaborating with researchers from different disciplines on projects that demand a multidisciplinary approach can lead to innovative solutions and expand your research interests.

- **Recruit diverse talents:** A key challenge in research is integrating new skills into the lab. This can be achieved by recruiting students and postdocs who bring a variety of skills distinct from your own.
- **Stay informed on emerging trends:** Consistently read literature beyond your specialty, including popular science and interdisciplinary journals, to keep abreast of wider scientific advancements. Being alert to new trends is a fundamental strategy for success, [as previously discussed](#).
- **Engage with industry:** Look for collaboration opportunities with industry partners. This can expose you to a different mindset and provide insights into how your research may be applied in real-world scenarios.
- **Learn a new skill:** Always be open to learning. A sabbatical, for instance, could be a valuable opportunity. Remember the [Pareto principle](#) (80:20 rule); you can achieve 80% of the results with 20% of the effort. As a Group Leader, the goal isn't to become an expert but to acquire sufficient knowledge to oversee those working in that area effectively.
- **Be ready for criticism:** It might be surprising, but when you venture into new fields or use new methods, many will become defensive. This happens more often than you might expect. Stepping out of your comfort zone means you're likely to face more criticism than if you stick to what you've always done. Reaching out could help, but be prepared for critique.



Sophien Kamoun  @KamounLab · Jan 6



New year resolution: Learn a **new skill**



[Learn a new skill.](#)


Acknowledgements

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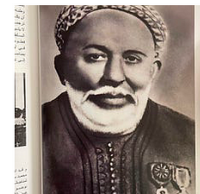
Cite as: Kamoun, S. (2024) Zenodo

Suggested readings


 KamounLab in Age of Awareness · Jun 5

Four timeless principles of success

The legacy of my great-grandfather Mohamed Said Kamoun lives on. His principles transcend generations and serve as guiding lights for anyone seeking success, whether in business or personal life. A rece...



[Four timeless principles of success.](#)

 KamounLab · May 31

Embracing the journey — Avoid being an energy vampire

“Please enjoy the journey” — let’s etch these words onto the walls of our laboratories. I have always been a sports enthusiast. There’s...



[Embracing the journey.](#)

 KamounLab · Jul 26, 2022

Even in a great orchestra, you will only hear the bad player

To be a successful scientist, a balanced skill set is important. Overachievers in just one area will struggle in academia. Cite as:...



[Even in a great orchestra, you will only hear the bad player.](#)



KamounLab · Jun 6, 2022

Time management for academics— forget about the Eisenhower method

I recently came to realize that I don't follow the famed Eisenhower method for time management. Instead, I like to Shuffle. Let me tell y...

	URGENT	NOT URGENT
IMPORTANT	Quadrant I <i>urgent and important</i> DO	Quadrant II <i>not urgent but important</i> PLAN
NOT IMPORTANT	Quadrant III <i>urgent but not important</i> DELEGATE	Quadrant IV <i>not urgent and not important</i> ELIMINATE

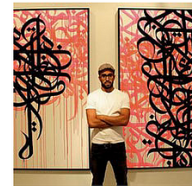
[Time management for academics.](#)



KamounLab · Jan 25, 2022

Don't hyperspecialize, you rarely know what will be useful in the future

These questions come up a lot. What should I study? What should I learn? My answer: anything. Cite as: Kamoun, S. (2022). Don't...



[Don't hyperspecialize.](#)