Interview Dra. Taissa Vila

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It is with great honor that Revista Conexão Ciência, from the University Center of Formiga (UNIFOR-MG), welcomes Dr. Taissa Vieira Machado Vila, a distinguished researcher in the field of microbiology and the Editor-in-Chief of The Lancet Regional Health – Americas, one of the world's most prestigious scientific journals. With an outstanding academic and professional trajectory, Dr. Taissa earned her degree in Pharmacy from the Federal University of Rio de Janeiro (UFRJ) and obtained her master's and doctoral degrees in Biological Sciences (Biophysics) from the Carlos Chagas Filho Institute of Biophysics (UFRJ). Her commitment to scientific research led her to work in prominent international research centers, including the University of Texas at San Antonio, where, between 2016 and 2018, she conducted postdoctoral research under the supervision of Dr. Jose Luiz Lopez-Ribot. During this period, she applied large content screening techniques to identify molecules with antifungal potential in Candida albicans biofilms. Continuing her remarkable academic path, between 2018 and 2020, Dr. Taissa developed projects at the University of Maryland, Baltimore, under the supervision of Dr. Mary Ann Jabra-Risk, coordinating innovative research on fungal-bacterial interactions in mixed biofilms using murine infection models. She also worked as a postdoctoral researcher at

the Carlos Chagas Filho Institute of Biophysics (UFRJ), under the supervision of Dr. Sonia Rozental and Dr. Wanderley de Souza. With extensive experience in the cellular biology of pathogenic fungi and fungal-bacterial interactions in mixed biofilms, Dr. Taissa has made significant contributions to advancing knowledge in antifungal chemotherapy, microbial resistance, and experimental infection models. Her research focuses on medically relevant organisms such as Candida albicans, Candida auris, Staphylococcus aureus, and Streptococcus mutans. Her work has directly impacted the development of new therapeutic approaches and strategies to combat resistant fungal and bacterial infections. Beyond her brilliant career as a scientist, Dr. Taissa plays a central role in scientific communication as the Editor-in-Chief of The Lancet Regional Health – Americas, a globally influential journal that shapes the direction of science and public health. Her editorial work reflects her commitment to excellence and the dissemination of highly relevant knowledge to the international scientific community. The editors of Revista Conexão Ciência express their deepest gratitude to Dr. Taissa Vieira Machado Vila for her generosity in sharing her experiences and insights in this interview. Undoubtedly, her reflections and expertise will enrich our audience, providing an inspiring perspective on the challenges and advances in biomedical research and high-impact scientific communication.

1. As Editor-in-Chief of the regional branch for the Americas of one of the world's most prestigious scientific journals, The Lancet, what are the main challenges of this position?

Dra. Taissa: The biggest challenge for me is also what I enjoy most about my job: constantly reading and learning about a wide range of topics! I spent over ten years deeply immersed in the field of clinical microbiology, which I already considered an enormous challenge, full of unanswered questions and an endless amount of knowledge to acquire. However, The Lancet Regional Health – Americas, despite its regional focus, is a journal with an exceptionally broad scope, covering all aspects of medicine and public health across the continent. Keeping up with multiple topics across highly diverse fields is demanding, and even after four years in this role, it remains my biggest challenge!

2. From your privileged position in analyzing the most pressing issues in global health, particularly in the Americas, what were the main emerging themes in 2024? Which trends are expected to gain even more prominence in 2025?

Dra. Taissa: In 2024, we continued to see a significant focus on lessons learned from the COVID-19 pandemic, including preparedness and response strategies, vaccine and treatment development, and the management of future pandemic threats. Among these lessons, I believe that telemedicine and the adoption of digital health technologies have become major areas that are here to stay. We will continue to see significant advancements both in the development of new technologies and in the implementation of existing ones. In 2025, we will keep seeing extensive discussions on monitoring pathogens with pandemic potential, strengthening health system resilience, and addressing the health impacts of climate change in our region. In North America, unfortunately, the opioid crisis remains one of the most severe public health issues, and 2025 is shaping up to be a year heavily influenced by the effects of governance on healthcare, particularly considering recent events in the United States and their repercussions on neighboring countries. Another emerging topic is the ethical debate surrounding the use of artificial intelligence in medicine – an urgent discussion that we must have to establish clear guidelines as we develop new health technologies.

3. Many of our readers are early-career researchers looking for guidance on emerging topics. Based on your experience, which research areas do you consider promising and with potential for publication in The Lancet?

Dra. Taissa: The Lancet group has a well-defined mission in which we understand health within its broader sociopolitical context. Our journals aim to always align medical advancements with a contextual analysis of the environments in which they occur. For this reason, research that examines medical issues through the lens of social, economic, and political determinants of health is particularly well-suited to our publications. Inevitably, climate change's impact on all aspects of health will be among the most promising research topics in the coming years. While it may seem like we already know a lot about this issue, there are still significant gaps in understanding—particularly in terms of data—regarding both the direct and indirect health impacts. This lack of evidence greatly hinders policymakers' ability to make

informed, evidence-based decisions. It is an under-researched field that urgently needs to advance at a faster pace.

4. Your research on fungi and bacteria has been widely recognized, with notable publications and awards at international events. Could you provide an overview of your main projects in this field, their significance, and future perspectives for mycology and microbiology?

Dra. Taissa: I am no longer directly involved in research... Over the past four years, I have been fully dedicated to *The Lancet Regional Health – Americas*, where infectious diseases remain one of the primary areas of focus due to their significant regional impact. Within microbiology, antimicrobial resistance and the emergence of multidrug-resistant organisms will continue to be the most critical areas of interest—including *Candida auris* and so-called "superbugs."

5. Your most cited articles focus on Candida albicans, a microorganism often underestimated in terms of clinical impact. What makes your research on this fungus so relevant? Why is it essential to continue investigating this pathogen, and what are the main trends in this field?

Dra. Taissa: Candida albicans – and even more so, non-albicans species like C. auris – are often underestimated! These fungi have an exceptional ability to form resistant structures known as biofilms. Within these biofilms, they become significantly less susceptible to antifungal treatments, making infections extremely difficult to control. This issue is further exacerbated when Candida interacts with bacteria in mixed biofilms, which can enhance resistance mechanisms. These biofilm-associated infections are particularly concerning in hospital settings, especially in intensive care units (ICUs), where immunocompromised patients – such as those with neutropenia – are at increased risk of severe infections. Fungal pathogens like Candida and Aspergillus (another major concern in hospital environments) suffer from a severe lack of available treatment options. There are very few effective antifungal drug classes, and in the context of public health, the newest and most potent medications are extremely expensive and often not accessible within public healthcare systems. Although there is extensive basic research in antifungal and antibacterial therapies, the translation of these findings into clinical practice is slow and receives minimal investment from major pharmaceutical companies, primarily due to low financial returns. This

is a high-demand field that needs significant expansion, but such progress will require a shift in mindset and strategic investment management to bridge the gap between basic research and clinical application.

6. The spread of scientific fake news has significantly impacted the healthcare field, particularly in combating misinformation about vaccines and ineffective treatments. How do you perceive this issue in scientific communication? What factors contribute to its propagation? And what strategies could be implemented to counter it, especially in a country like Brazil, which has been heavily affected by this phenomenon?

Dra. Taissa: The dissemination of scientific fake news is a critical issue in healthcare and, unfortunately, a reality that must be confronted. In scientific communication, I see two key aspects: understanding why we lost ground and reinventing our communication strategies to expand our reach. It is undeniable that the scientific community bears some responsibility for this situation, as it took far too long to recognize that we cannot speak only to our peers. Learning to communicate science in an accessible, understandable, and contextualized way is not just about bringing people closer to the scientific environment – it is an essential public health service! Information can only save lives if it is understood. This comprehension must go beyond merely explaining what a drug or vaccine is for; it must also convey the role of science in people's daily lives and its broader societal impact. We lost this space, and it was quickly occupied by bad-faith actors who mastered the use of the right language and communication tools—but to spread harmful misinformation instead. Now, we must work to reclaim that ground. I remain optimistic about our efforts to reestablish this dialogue. For example, vaccine coverage has recovered significantly over the past year, largely due to the serious and effective communication efforts of Brazil's Ministry of Health under its new administration. We have a strong tradition of vaccination, and that proved more powerful than poorly substantiated fake news. Now, we need to sustain and expand this work.

We must focus on scientific literacy, advocate the importance of science communication, and strengthen school curricula with education on scientific methodology and critical thinking. These steps are crucial for training a new generation capable of resisting misinformation and ensuring that this

problem does not be resolved in the future.

7. After the global health crisis of COVID-19, in 2025 we are facing challenges such as dengue, Oropouche fever, avian flu, and the health impacts of climate change. In your view, what is likely to be the next major health crisis? Which emerging threats require greater attention and preparedness?

Dra. Taissa: The next health crisis is already unfolding... The avian flu outbreak in the U.S., despite receiving little media attention, should not be overlooked. It has the potential to become a global crisis. While there is no clear consensus on what the next major health crisis or pandemic will be, at a local level, we should be preparing for the expansion of arboviruses into previously non-endemic regions (as we are already witnessing) and the emergence of new viral epidemics. There is widespread concern about multidrug-resistant bacteria, but at a population level, my personal view is that we should be strengthening our primary healthcare system in anticipation of prolonged and intensified cycles of viral epidemics, such as dengue, Zika, and chikungunya. We still lack adequate primary care capacity and diagnostic infrastructure for these viral fevers, and we do not fully understand their complications and risk factors. We are far from being prepared for another outbreak—and I believe it is only a matter of time before it happens.

8. Your publications are widely cited, a clear recognition of the quality of your work. What advice would you give to researchers – both experienced and early-career – on how to produce high-impact academic articles?

Dra. Taissa: I believe that the only way to produce impactful work is to truly understand what you are doing. It may sound obvious, but it isn't! The more deeply you understand your research – whether it involves basic science, modeling, or clinical trials – the better you will be able to communicate it. Only when you have a thorough grasp of your work can you write for the right audience, ensuring that your research is read and cited. Understanding your research goes beyond mastering the techniques or knowing the literature behind your research question. When you fully comprehend your study, you can clearly define the scope of your conclusions, correlations, and comparisons. You are also able to transparently communicate both the advances and the limitations of your findings. Most importantly, a deep

understanding of your work allows you to identify the remaining gaps in knowledge – those that will guide your next steps.

9. In addition to high-impact publications, your career includes experience at leading research centers in the U.S. during your postdoctoral training. What were the main challenges, difficulties, and achievements of that period? What advice would you give to researchers who wish to follow a similar path?

Dra. Taissa: The biggest challenges for me were personal. Being away from my family and friends for so long was difficult – it was an extremely pragmatic decision that required a great deal of psychological support in my case. However, I was also very fortunate! I made friends quickly, had no major cultural adaptation issues (there were, of course, some minor adjustments, but nothing extreme in my case), and was warmly welcomed into every lab I joined. In retrospect, it was the best decision I ever made.

Professionally, I grew tremendously, established contacts and collaborations that would have been extremely difficult – or even impossible – without the advantage of face-to-face interactions, attended conferences that I would not have had access to if I had stayed in Brazil, and was highly productive. The ease of access to reagents and equipment is another crucial advantage of working in international research centers. My advice to those considering this path is: go for it! But understand that it is a pragmatic decision. If you are an early-career researcher, any international experience will be immensely valuable. However, since I went abroad during my doctoral studies and later for postdoctoral research, I recommend conducting thorough research on where to go, whom to work with, and what you hope to gain or accomplish from the experience. This is an important door you are opening, so make sure it is the right one – one that will lead you toward your long-term goals. Always think ahead about your next step and how this experience can bring you closer to achieving it.

10. Finally, based on your experience as Editor-in-Chief at The Lancet, what criteria define a high-quality article with publication potential? What are the most common mistakes leading to rejection, and what can increase the chances of acceptance?

Dra. Taissa: A strong article always has a clear and well-justified research question. If I finish reading the abstract and still do not understand the study's objective or why it is relevant, that is not a good start.

The second most important factor is using the appropriate methodology to address the research question. The most common reasons for desk rejection are failing to apply the correct methodology for the question at hand or drawing conclusions that are not fully supported by the results. Two key aspects increase the likelihood of acceptance: clear, concise writing that acknowledges the limitations of the methodology and engagement with the peer review process. You do not always have to follow every suggestion made by reviewers but remember that they are experts in the field – often as much as or more than you. Their recommendations should be considered with respect, and your response should provide a well-reasoned justification for any changes made (or not made) and why.