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## COFFEE WITH SCIENCE BIO UVA: PROPOSAL FOR AN ONLINE SCIENCE DISSEMINATION TOOL

### CAFÉ COM CIÊNCIA BIO UVA: PROPOSTA DE FERRAMENTA DE DIVULGAÇÃO CIENTÍFICA ONLINE

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#### ABSTRACT

This article highlights the importance of scientific and technological dissemination in contemporary society, especially facilitated by technological advances. During the COVID-19 pandemic, technology enabled and boosted the transition from in-person events to an online format. The “Coffee With Science BIO UVA online” project exemplifies this transition. This university extension project aimed to promote scientific dissemination online, attracting and engaging a diverse audience through social media. The applied methods included virtual lectures (Lives) and workshops on various scientific and educational topics, using social networks (YouTube, Facebook, and Instagram) as the main platforms for transmission and outreach. During the analyzed period, 82 LIVES were conducted (24 in 2020, 33 in 2021, and 25 in 2022) with speakers from national and international institutions. The project received 2,320 responses via Google Forms. Analysis showed a decrease in responses: 963 in 2020, 713 in 2021, and 644 in 2022. We conclude that online scientific dissemination via virtual lectures, supported by social networks, is a powerful tool for promoting scientific education, as demonstrated by the positive impact of the Coffee With Science BIO UVA online project, thereby contributing to the dissemination of scientific knowledge and the building of a more integrated connection between the scientific and non-scientific communities.

**Keywords:** Online Scientific Dissemination. Virtual Lectures. Social Network. YouTube Live. Scientific Education.

#### RESUMO

Este artigo destaca a importância da divulgação científica e tecnológica na sociedade contemporânea, especialmente facilitada pelos avanços tecnológicos. Durante a pandemia da COVID-19, a tecnologia permitiu e impulsionou a transição de eventos presenciais para o formato online. O projeto “Café Com Ciência BIO UVA online” exemplifica essa transição. Este projeto de extensão universitária teve como objetivo promover a divulgação científica online, atraindo e engajando um público diverso por meio das mídias sociais. Os métodos aplicados incluíram palestras virtuais (Lives) e workshops sobre diversos temas científicos e educacionais, utilizando as redes sociais (YouTube, Facebook e Instagram) como principais plataformas de transmissão e divulgação. Durante o período analisado, foram realizadas 82 Lives (24 em

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2020, 33 em 2021 e 25 em 2022) com palestrantes de instituições nacionais e internacionais. O projeto recebeu 2.320 respostas via Formulários Google, cuja análise mostrou uma redução no número de respostas: 963 em 2020, 713 em 2021 e 644 em 2022. Concluímos que a divulgação científica online, por meio de palestras virtuais apoiadas pelas redes sociais, é uma ferramenta potente para a promoção da educação científica, como demonstrado pelo impacto positivo do projeto online Café com Ciência BIO UVA, contribuindo assim para a disseminação do conhecimento científico e para a construção de uma conexão mais integrada entre a comunidade científica e a não científica.

**Palavras-chave:** Divulgação Científica Online. Palestras Virtuais. Redes Sociais. Live no YouTube. Educação Científica.

## INTRODUCTION

According to Fischhoff and Scheufele (2013), all people need science to make effective decisions in their lives, as it is potentially the best source of evidence to answer most questions that affect our daily lives. Scientific dissemination in the online universe has grown over the last few decades (Bucchi, 2012) and gained momentum, especially on social networks, with expanded accessibility as one of its main benefits. In addition, social media offer a dynamic space that allows direct interaction with the public through questions, inquiries, and the exchange of experiences.

Analyzing the impact of new media on the relationship between science and the public, Brossard and Scheufele (2013) discuss the urgency for scientists to pay attention to new trends and the emerging scholarly literature on communicating science in this brave new online world.

In this scenario, in December 2019, Chinese health authorities reported an outbreak of pneumonia of unknown origin in Wuhan, Hubei Province. A few days later, the genome of a novel coronavirus was released and made publicly available to the scientific community. This virus was named SARS-CoV-2 (Ciotti *et al.*, 2020).

At the beginning of 2020, due to the increased number of cases in China and other countries, the World Health Organization (WHO) declared it an international public health emergency (Souza *et al.*, 2021). Because of its global reach, humanity faced a new pandemic period, which became known as the COVID-19 Pandemic.

According to Mseleku (2020), the unexpected COVID-19 outbreak affected several sectors of the economy and every aspect of human life worldwide. The author also highlights that this led to the closure of higher education institutions and a major shift from traditional classroom-based teaching to virtual learning.

During the pandemic, Li *et al.* (2021) published a study using the informal scientific communication model in social media as a theoretical basis to explore the characteristics and dynamics of scientific communication on social media during emergency events. The study also aimed to grasp the potential and risks of scientific communication on social media in special times and to provide an academic communication perspective for the scientific response.

Similarly, Valenti *et al.* (2021) highlighted that during the global spread of COVID-19, the enhancement of existing digital platforms and the development of new systems for sharing scientific knowledge allowed the scientific community to “meet” again in new virtual environments (e.g., Cisco WebEx, Demio, Google Hangouts, GoToWebinar, Live Stream, Microsoft Teams, Skype, Zoom, etc.).

The COVID-19 pandemic brought significant changes to traditional approaches for hosting social and professional communication events. The flexibility and convenience of online platforms became essential for maintaining communication among researchers, professionals, and the general public during the global crisis.

According to Bautista *et al.* (2022), social media platforms such as Facebook, Twitter, and LinkedIn have become popular ways to showcase, share, and promote science. In this context, YouTube, a popular video-sharing platform, has emerged as a valuable resource offering lectures, vlogs, and educational videos.

Santos and Xavier (2021) investigated how entertainment can be used as a scientific communication tool on YouTube and found that entertainment is perceived mainly through visual and sound resources, which can be interpreted as infotainment.

Exploring the role of YouTube in enhancing English as a Second Language (ESL) learning, Sadaf *et al.* (2024) recognized YouTube as an important new approach to learning that increases and improves students’ knowledge.

The increased frequency of posts and the inclusion of additional platforms, such as YouTube, significantly enhanced visibility and engagement among audiences interested in science.

In this context, this study aimed to investigate the reach of online scientific dissemination accomplished by the Coffee With Science BIO UVA Project and to identify new strategies to amplify the potential for disseminating science through the internet.

## MATERIAL AND METHODS

The Coffee With Science BIO UVA Project was carried out in its online version from 2020 to 2022. In this virtual scenario, the lectures were held live, using the StreamYard® platform, and transmitted to the project's YouTube channel ([www.youtube.com/@cccbiouva](http://www.youtube.com/@cccbiouva)), where they are stored for later access.

The live sessions were mainly scheduled on Wednesdays at 3 p.m. However, there was flexibility regarding times and days of the week, prioritizing the speaker's availability, which allowed greater participation from researchers and speakers.

At the end of each live session, a link was posted to access the project's Google Forms. Once completed, participants received a certificate of participation via the registered email, acknowledging their attendance as live viewers.

To better understand the audience of this university extension project, qualitative and quantitative analyses were conducted on the data collected through the Google Forms. Furthermore, to analyze the reach of scientific dissemination on social networks such as YouTube, Facebook (<https://www.facebook.com/cafecomcienciabiouva/>), and Instagram (@CCC\_BIO\_UVA), databases provided to the platform administrators within their management environments were also examined.

## RESULTS AND DISCUSSION

### Lives

During the analyzed period, 82 live sessions were held as part of the Coffee With Science BIO UVA project, covering a wide range of scientific topics and featuring speakers from various institutions and fields of knowledge. Tables 1 to 3 present the data, lecture titles, and names of the speakers for the years 2020 (Table 1), 2021 (Table 2), and 2022 (Table 3).

**Table 1:** Date, title, and speaker of the 24 YouTube live sessions held in 2020 as part of Coffee With Science BIO UVA, including the speakers' names and their institutional affiliations at the time of each session. Dates are formatted as M/D (month/day).

	M/D	Title of the YouTube Live	Speaker (Institution)
1	05/06	COVID-19 and Antivirals	Dr. Thiago Moreno (FIOCRUZ)
2	05/30	How to maintain your sanity during social distancing: Lessons learned from camping in Antarctica	Dr. Alexandre Santos de Alencar (UVA)
3	06/05	The wonderful world of bromeliads	Dr. André Micaldas Corrêa (UVA)
4	06/20	Entrepreneurship in Biology: Thinking outside the box	Dr. Marco Eduardo do N. Rocha (UVA)
5	06/26	IV Plant Ecology Forum: Brazilian Biomes and Entrepreneurship	MSc. Gustavo Lima (PlanktonBrazil)
6	07/04	Didactic tools for teaching Biology	Dr <sup>a</sup> . Máira Moraes Pereira (UVA)
7	08/19	Sustainable Development and Sustainability: Brazilian obstacles to the 2030 Agenda	Dr. André Nunes de Freitas (UFRRJ)
8	08/22	Working in Space..	Dr <sup>a</sup> . Alessandra Abe Pacini (OQDF)
9	08/29	Transforming wild animal collisions into research	Dr <sup>a</sup> . Cecília Bueno (UVA)
10	09/02	Epigenetics: Do our genes determine who we are?	Dr <sup>a</sup> . Sheila Coelho (INCA)
11	09/09	We need to talk about sex... in schools	MSc. Erica Helena
12	09/12	Environmental licensing in Brazil: What kind of animal is this?	MSc. Renato Stefani Massa (INEA)
13	09/18	Pantanal in focus: Knowing so you don't pay a price	Dr. Antonio Carlos de Freitas (UERJ)
14	09/26	Astrobiology: a cosmic perspective on the past, present, and future of life in the Universe	MSc. Bruno Nascimento-Dias
15	10/02	Biology: from the classroom to social media	Prof <sup>a</sup> . Rafaela Lima (Canal Mais Ciências)
16	10/08	Biological entrepreneurship: from the laboratory to the office	Dr. Marcio Cataldo (Draxos)
17	10/14	Adaptive radiation and the fantastic world of marsupials	Dr <sup>a</sup> . Mariana Silva Ferreira (UVA)
18	10/21	Testaceous amoebas and their applications in scientific dissemination	Dr <sup>a</sup> . Viviane Miranda (UFF)
19	10/28	Could alligators be living fossils?	Dr <sup>a</sup> . Lucy Souza (Make Science BR)
20	11/04	Perspectives for combating SARS-CoV-2, the new coronavirus	MSc. Denise Alves (FIOCRUZ)
21	11/11	Antarctica on the web: from researcher to YouTuber	Dr <sup>a</sup> . Francyne Elias-Piera (Inst. Gelo na Bagagem)
22	11/18	Vaccines and their importance	Dr. Fabricio Montalvão (UVA)
23	11/25	Science outside the box	Dr <sup>a</sup> . Thereza Christina Darbilly
24	12/09	Entrepreneurship, conservation, and environmental education	Dr. Marco Eduardo do N. Rocha (UVA)

**Source:** Prepared by the authors (2025).

**Table 2:** Date, title, and speaker of the 33 YouTube LIVES, including the names and institutional affiliations of the speakers on the date of each LIVE, within the context of Coffee With Science BIO UVA in 2021. M/D denotes month/day.

M/D	Title of the YouTube LIVE	Speaker (Institution)
03/03	Obesity: pathophysiology of an epidemic	Dr <sup>a</sup> . Marisa Dreyer Breitenbach (UERJ)
03/10	Forensic Biology in solving crimes	Dr <sup>a</sup> . Máira Moraes Pereira (UVA)
03/17	Where did Brazilian titanosaurs go?	MSc. Kamila Bandeira (MN/UFRJ)
03/24	Deep-sea molluscs: fantastic animals and where they live	Dr. Leonardo Santos de Souza (MN/UFRJ)
03/31	Plant metabolism and evolution as a tool for conservation	Dr. Marco Eduardo do N. Rocha (UVA)
04/07	The story of ancient diseases told through studies of archaeological remains	Dr <sup>a</sup> . Shênia Novo (FIOCRUZ)
04/14	Laboratory biosafety: what's new on the front	Dr. Allan Cezar de Azevedo Martins (UVA)
04/21	Diptera: heroes or villains?	MSc. Marco Antônio Menezes (MN/UFRJ)
05/05	I had a business idea! What to do? Sebrae responds	Bruna Tchordach e Jacqueline Ferreira (SEBRAE/RJ)
05/12	Malaria: Facts and fakes about the biggest tropical disease	MSc. Hugo Amorim dos S. de Souza (FIOCRUZ)
05/19	Cellular therapies with pluripotent cells: past, present, and future	Sara Nunes Vasconcelos, PhD. (University of Toronto)
05/26	Maternity, Research, and Pandemic.. Help!	Dr <sup>a</sup> . Ximena Ovando (UERJ)
06/02	Health and Environment: Entomology in Environmental Impact Studies	MSc. Thamiris Balthazar (FIOCRUZ)
06/09	Hemiptera: who they are, development, and curiosities	MSc. Victor Quintas (MN/UFRJ)
06/16	Barriers in the landscape: influences on the genetics of mammal populations	Dr <sup>a</sup> . Natália C. Ardente (UERJ)
06/23	One Health: environment, agriculture, and human beings, all together and mixed	MSc. Fernanda Short (UFRJ)
06/30	Ecology and ethnobotany in the management of species of economic interest	Dr <sup>a</sup> . Denise Dias da Cruz (UFPA)
08/11	Updates on COVID-19	Dr. Thiago Moreno (FIOCRUZ)
08/18	Photography as a scientific method - a historical retrospective	Dr. Antonio Carlos de Freitas (UERJ)
08/25	Conspiracy at sea: pollution and other environmental impacts	Dr <sup>a</sup> . Patricia Beck Eichler Barker (UFRN & UFBA)
09/08	Project: What rain is this? Contributing to making cities sustainable	Dr <sup>a</sup> . Viviane Japiassú Viana (UVA)
09/15	Construction of the biologist's professional life	Dr. André Micaldas (UVA & FIOCRUZ)
09/22	Systems biology: the junction between science, philosophy, and spirituality	Prof. Antônio Carlindo R. da Câmara Lima (UVA)
09/29	Aerobiology of SARS-CoV-2	Dr. Heitor Evangelista (UERJ)
10/06	Reading about facts and effects	Dr <sup>a</sup> . Ondina Maria Alves de A. dos Santos (UVA)
10/13	Climate Change and Aerosols	Dr <sup>a</sup> . Elaine Alves dos Santos (UERJ)
10/20	Reconstruction of the National Museum/ UFRJ: advances and challenges	Dr. Alexander Wilhelm Armin Kellner (MN/UFRJ)

10/27	Ilhas do Rio Project: biodiversity, environmental education, and much more.	Dr <sup>a</sup> . Renata Gomes (Inst. Mar Adentro & MN/UFRJ)
11/03	Integrating Ecology and Parasitology: the importance of multidisciplinary studies in the context of the Anthropocene	Dr <sup>a</sup> . Natalie Olifiers (UVA)
11/10	Stress in Antarctic birds: What!	Dr <sup>a</sup> . Erli Schneider Costa (UERGS)
11/24	Sharing a life with molluscs (Part I)	José H. Leal, Ph.D. (Bailey-Matthews National Shell Museum)
12/01	APECS-Brazil: promoting and stimulating polar science	Dr <sup>a</sup> . Graciéle Alves de Menezes (APECS-Brasil)
12/08	Sharing a life with molluscs (Part II)	José H. Leal, Ph.D. (Bailey-Matthews National Shell Museum)

Source: Prepared by the authors (2025).

**Table 3:** Date, title, and speakers of the 25 YouTube LIVES, including the names and institutional affiliations of the speakers on the date of each LIVE, within the context of Coffee With Science BIO UVA in 2022. M/D denotes month/day.

	M/D	Title of the YouTube LIVE	Speaker (Institution)
1	03/09	Cultural Zoology: from meme to classroom	Dr. Elidiomar Ribeiro da Silva (UNIRIO)
2	03/16	Disruptive Innovations for a New Look: The challenge of sustainability	Dr. Carlos Eduardo Soares Canejo (UVA)
3	03/23	Ecotoxicology and Malacology: A Close Relationship	Dra. Lenita de Freitas Tallarico (Inst. Butantan)
4	03/30	Environmental education and political ecology in the current national scenario	Dr. Celso Sánchez Pereira (UNIRIO)
5	04/06	WMAR - Working Method and Academic Research	Dra. Ondina Maria Alves de A. dos Santos (UVA)
6	04/27	From primates to transhumanism	Dr. Bruno Nascimento Dias (UFRJ)
7	05/04	Gamification in Education	MSc. Victor Azevedo (UVA)
8	05/11	Scientific Education and Dissemination of Polar Science	Dra. Silvia Dotta (UFABC)
9	05/18	The adventures of Professor Maluquinho: report of experiences in Scientific Communication	Dr. Paulo Robson de Souza (UFMS)
10	05/25	Marulho Project: sewing impact networks	MSc. Beatriz Mattiuzzo (UFRRJ)
11	06/01	Radioecology: relationships between the environment and radioactivity	Dr. Marcus Vinícius V. J. Licínio (UFES)
12	06/15	Interaction hubs in cancer: a new way of searching for therapeutic targets and understanding aggressiveness	Dra. Flávia Carneiro (FIOCRUZ)
13	06/29	The secret life of parasites	Dr. Roberto do Val Vilela (FIOCRUZ)
14	08/10	Palynology: past, present, and future from the perspective of biodiversity	Dra. Vania Gonçalves L. Esteves (MN/UFRJ)
15	08/17	Astrobiology: exploring life at the ends of the Earth and the Universe	Dra. Amanda Bendia (USP)
16	08/24	Climate change: what do microorganisms tell us?	Dra. Anna Beatriz Jones Oaquim (UERJ)
17	08/31	Genetic counseling: how DNA influences decisions	MSc. Vanessa Mendonça (INCA)
18	09/14	Youth & oceanic culture	Biól. Nayana Cordeiro (TSU Ambiental)

19	09/21	Science, Ocean and Society: a new wave	Dra. Barbara Lage Ignacio (UNIFESP)
20	09/28	In every Scientist, a JEDI: Justice, Equity, Diversity, and Inclusion as a scientific priority	Dra. Maria Augusta Arruda (University of Nottingham)
21	10/05	Sickle cell disease: We need to talk about it	Dra. Joyce Alves Rocha (IFF/RJ)
22	10/19	Investigative Teaching: Awakening the scientist within the student	MSc. Carla Pinto (SEDUC/RJ)
23	10/26	Reemergence of vaccine-preventable diseases	Dra. Lilian Moreira (UFRJ)
24	09/29	Bioremediation: the use of microorganisms against environmental pollution	Dra. Cristina Rossi Nakayama (UNIFESP)
25	10/06	From theory to detection: involvement of Herpesvirus and Poliomyavirus in salivary gland cancer	MSc. Ana Carolina Silva Guimarães (FIOCRUZ)

Source: Prepared by the authors (2025).

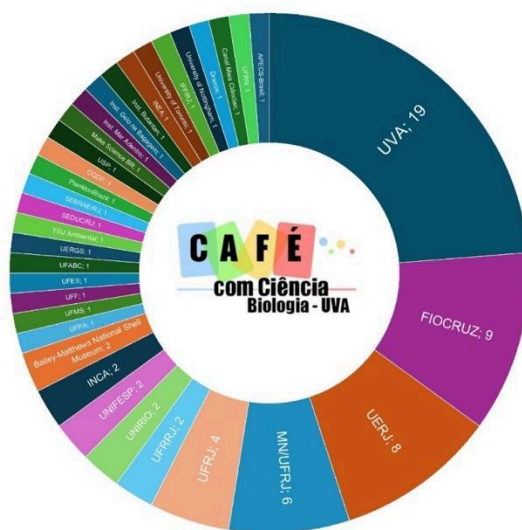
With the main objective of establishing and promoting a multidisciplinary space for holding scientific debates through the organization of a cycle of face-to-face seminars, the Coffee With Science BIO UVA project was created (Alencar *et al.*, 2020). Designed to be a space for scientific discussion through the realization of in-person lecture cycles, the project was created in 2017 and developed in this format until the beginning of 2020. During this period, 66 scientific in-person lectures were held, with 2,271 participants, representing an average of 34±16 people per lecture (Alencar *et al.*, 2024). With the onset of the COVID-19 pandemic, the project had to be adapted to a virtual format in compliance with social distancing requirements and the necessary restrictive measures to prevent the spread of the virus.

The online version of the Coffee With Science BIO UVA was performed between 2020 and 2022, and during these three years, of the 82 YouTube Lives accomplished, 24 were in 2020, 33 in 2021, and 25 in 2022. These Lives were mainly performed by women, representing 59%, while men represented only 41% of the total speakers. It is worth noting that the majority of female speakers are due, in part, to the fact that the project held a season with lectures given exclusively by female speakers. Most speakers hold a doctorate, being: 59 Dr., 3 PhD., 16 MSc., and 2 other professionals. Furthermore, for the most part, they were affiliated with national teaching, research, and extension institutions. However, three of which were associated with international institutions: the University of Toronto, the Bailey-Matthews National Shell Museum, and the University of Nottingham.

Due to the COVID-19 pandemic, events that were traditionally held in person had to migrate to the virtual universe, a need to adapt to guarantee the safety of the population. According to Liguori and Winkler (2020), the gradual spread of the COVID-19 pandemic posed a significant challenge to the education system, as educational institutions, from

early childhood to higher education, were forced to close their doors and seek alternatives to ensure the continuity of teaching and learning. This transition to online platforms revealed not only a protective measure against the spread of the virus but also an efficient solution that allowed activities to continue and reach an even wider audience. The virtual environment facilitated the holding of conferences, seminars, and workshops, maintaining the flow of knowledge and interaction between participants while respecting social distancing guidelines. During the project development period, the lectures speakers were mainly from UVA (Universidade Veiga de Almeida) with 19 speakers, as well as from other universities and research centers, such as FIOCRUZ (Fundação Oswaldo Cruz) with 9 speakers, UERJ (Universidade do Estado do Rio de Janeiro) with 8 speakers and MN/UFRJ (Museu Nacional / Universidade Federal do Rio de Janeiro) with 6 speakers, among others.

**Figure 1:** Graph of speakers by institutions at Coffee With Science BIO UVA during the analyzed period, 2020, 2021, and 2022.



Source: Prepared by the authors.

Figure 1 shows that, during the analyzed period, UVA presented the largest number of speakers (19). This was expected since the project was developed within the context of its Undergraduate Biology course. An important aspect of having local speakers is that, being part of the same institution, they strengthen the connection between students and faculty. This occurs due to closer interaction in daily academic life, as well as a deeper understanding of the cultural and academic needs of the students, making the lectures more relevant and engaging. The growing interest in science dissemination offers new

opportunities to communicate science openly to various audiences; however, it also presents the challenge of adapting to a public that does not share the same academic background (Bernad-Mechó; Valeiras-Jurado, 2023). Still in this context, Mseleku (2020) discusses that, although higher education may have transformed and moved online due to COVID-19, it is unknown whether this transformation produces positive teaching and learning outcomes.

### **Google Forms**

During the Coffee With Science BIO UVA project period (2020–2022), the Google Form prepared for the project received a total of 2,320 responses: 963 in 2020, 713 in 2021, and 644 in 2022. Initially, the growth of the Coffee With Science BIO UVA project seems directly related to the impact of social media on scientific dissemination, promoted through its lectures. However, over the evaluated period, a downward trend in the number of responses on the Google Form was observed, which is directly linked to the channel's audience. In 2021, there was a significant decline, and this downward trend persisted in 2022. The reduction observed during this period may be associated with various factors, such as scheduling conflicts due to personal or professional commitments; technical difficulties, including internet connection issues and software or hardware failures that prevent access to the platform; the absence of reminders and notifications; as well as personal or health-related issues.

To gain an overview of science communication on YouTube and examine content factors that affect the popularity of science communication videos on the site, Welbourne and Grant (2015) analyzed 390 videos from 39 YouTube channels. The authors note that, although the popularity of a YouTube video depends on both content and content-agnostic factors, content factors appear to be the most informative for understanding broad popularity within the YouTube community.

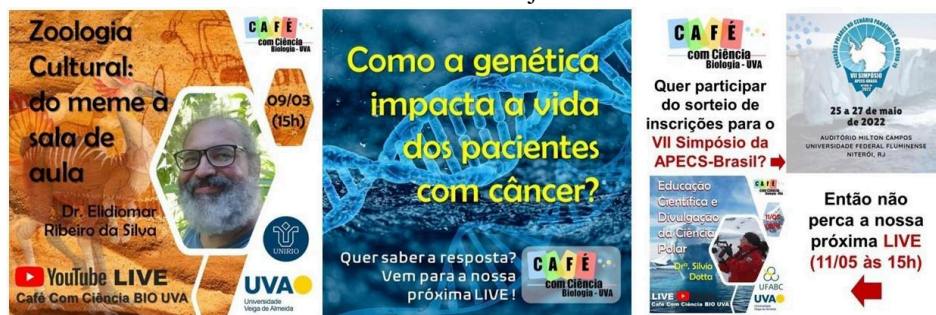
### **Social Network Data**

Over the last few years, technology and social media have become the primary means of communication, providing an accessible language for conveying complex concepts and topics, regardless of the audience's age. According to Bautista *et al.* (2022), with the advancement of the internet and social networks, communication has become rapid and sometimes overwhelming, especially in science. Therefore, it is important to

provide scientists with effective, useful, and dynamic tools to establish and build a fluid communication framework that fosters scientific advancement.

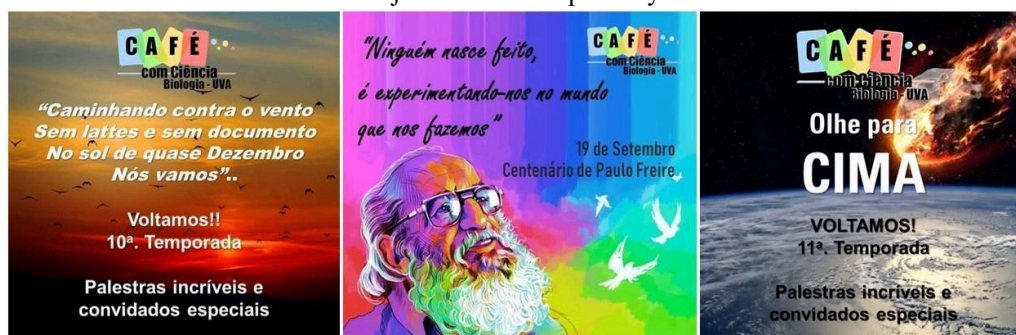
The use of images, videos, graphs, and infographics simplifies technical information, making it more comprehensible. Engaging with the audience through questions and answers, polls, and discussions promotes bidirectional communication, making science more engaging and relevant. This integrated approach not only expands the project's reach but also encourages interaction and active community involvement. Figure 2 shows some banners used to publicize Lives and events (e.g., raffles), while Figure 3 shows examples of communication banners aimed at the audience, in the context of Coffee With Science BIO UVA online.

**Figure 2:** Examples of banners used to publicize LIVES and events in the context of the Coffee With Science BIO UVA Project.



Source: Prepared by the authors.

**Figure 3:** Examples of communication banners with the audience in the context of the Coffee With Science BIO UVA Project. Source: Prepared by the authors.



Source: Prepared by the authors.

## YouTube

Data from the Coffee With Science BIO UVA Project channel on YouTube ([www.youtube.com/@cccbiouva](http://www.youtube.com/@cccbiouva)) show that, since its registration on the platform (June 26,

2020) until the present date (April 14, 2025), the channel has 1,361 subscribers. During this period, 99 videos were posted on the project's YouTube channel, including 84 Lives and 15 promotional videos, which together reached 26.9K views, with a total watch time of 6,920 hours. Brazil accounts for the largest number of followers, representing 54% of the audience. YouTube data also show gender participation differences, with 58% women and 42% men viewers. The predominant age group among followers is between 18 and 25 years old, representing 55% of the audience. Other age groups represented include 25-34 (23%), 35-44 (9%), 45-54 (8%), 55-64 (3%), and 65 years or older (2%).

Interestingly, most (61%) of the Coffee With Science BIO UVA online audience consisted of viewers who were not subscribed to its YouTube channel, compared to 39% who were subscribers. The audience mainly accessed the channel content via mobile devices (52%), followed by computers (43%), TVs (3%), and tablets (2%). During the analyzed period (June 26, 2020 - April 14, 2025), the most watched content was the LIVE entitled "Aerobiology of SARS-CoV-2," performed by Dr. Heitor Evangelista (UERJ) with 1,370 views, followed by "Genetic Counseling: How DNA Influences Decisions," performed by MSc. Vanessa Mendonça (INCA) with 1,152 views. Sadaf et al. (2024) highlighted the conceptual framework of YouTube, which includes: 1) Multimodal Learning, 2) Engagement and Motivation, 3) Language Input and Output, 4) Peer Learning and Interaction, and 5) Cultural Understanding. For these reasons, we believe that choosing YouTube as the main platform for the development of the Coffee With Science BIO UVA Project was a sound decision.

## **Facebook**

Browsing data from the project's Facebook page showed that, between April 8, 2017, and April 14, 2025, a total of 1.5K people clicked the "like" button, indicating their interest in following the project's posts. During the analyzed period, the page's growth was organic, meaning no payment was made to Facebook® to boost its reach. The Facebook page database has been available since the project was implemented in its face-to-face version, so the data starts in 2017. Since its creation, the page has shown significant growth, increasing from 541 followers (Alencar *et al.*, 2020) to 790 followers (Alencar *et al.*, 2024), and currently has 1.5K followers.

## Instagram

Navigation data from the Coffee With Science BIO UVA Instagram account (@CCC\_BIO\_UVA), analyzed between February 17, 2020, and April 24, 2025, showed 1,941 followers, with the page following 276 profiles, mainly other science communicators. During this period, 298 posts were made, including banners and videos, which received 7,614 likes and 218 comments. The average number of likes per post was  $26 \pm 13$ , with the post about the organization of the IV BIOSemana at UVA receiving the highest number of likes (99). Videos posted on the profile accumulated 805 views, with the video announcing the closing of the 9th Season of the Coffee With Science BIO UVA Project receiving the most views—132 during the analyzed period. This was likely because the vast majority of project followers were UVA students, and the scientific event was organized by undergraduate Biology students.

Recognizing that science's potential to answer important everyday questions requires effective two-way communication with those it aims to serve, it is essential that science produces relevant information and conveys it credibly and understandably (Fischhoff; Scheufele, 2013). Scientific dissemination is vital to bridging the gap between academic research and the general public, making complex knowledge accessible and easy to understand. By integrating social media and digital platforms, broad reach and greater interaction between researchers and the audience can be achieved.

However, low participation and motivation among students in scientific lectures can be attributed to factors such as the perceived lack of relevance between content and students' interests, information overload, absence of interactivity, and technical difficulties accessing the platform. Additionally, a lack of emotional engagement, when content does not connect with participants' realities, also contributes to disinterest. To improve participation, scientific dissemination events must adopt dynamic approaches that encourage interaction and make content more relevant and engaging.

Lewis and Allan (2004) recognized the great potential of virtual communication tools to support new collaborative learning approaches, but they cautioned against focusing exclusively on virtual communities and technologies. According to the authors, the most effective tools are those that combine face-to-face and virtual interactions — a blended approach.

## CONCLUSION

Over the three years analyzed (2020–2022), the Coffee With Science BIO UVA project had as its primary objective the promotion of scientific dissemination in the digital environment, strengthening knowledge exchange within the academic community and expanding the reach of information to a broader audience. The initiative aimed to attract students, professors, and researchers interested in disseminating relevant scientific topics through discussions and lectures given by experts from various fields. Thus, the platform provided an interactive space for sharing experiences and scientific updates, encouraging active participation from the academic community and fostering critical thinking on current scientific issues.

This article highlighted the project's evolution during its online phase, demonstrating its impact on scientific knowledge dissemination. For this reason, the Coffee With Science BIO UVA project can be considered an efficient tool for online scientific outreach. Members of current generations may not be interested in the content available in the Coffee With Science BIO UVA Lives, due to their preference for faster and more direct information. However, we believe that the content posted and preserved on the project's YouTube channel can serve as a valuable research collection for those seeking a broader view of the scientific issues addressed in the Lives.

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