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## Scientist at School: Connecting Elementary Students to University Clinical Research Scientists Through Live Streams During a Pandemic in Southern Brazil

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### APPENDICES

#### Appendix 1

*Choice of Lives 3 to 5 Themes*

Choose the next live streams of "Scientist in School"

The project "Scientist at School" is a partnership of the Postgraduate Program in Medical Sciences of the Federal University of Rio Grande do Sul with the Governor Ildo Meneghetti school located in the North Zone of Porto Alegre. The project aims to disseminate the research and content developed at the University to society and allow the exchange of knowledge between those involved. Below we list research projects developed at UFRGS sent by researchers to be presented to the school community.

What themes do you want to watch on our upcoming *lives*? (Choose up to 03 options)

- [ ] Freehand drawing: sketches in the post-digital age
- [ ] An Urban Experience through Pokémon GO Game
- [ ] How does it occur and what are the mechanisms of brain inflammation?
- [ ] Funga Discloses: knowing about the diversity and importance of fungi for our ecosystem
- [ ] Relationship between resistance to antifungals with the use of pesticides and sewage dumped into water bodies
- [ ] Nature Deficit Disorder: can the lack of contact with nature make us sick?
- [ ] Evaluation of new compounds for the treatment of tumors of the nervous system
- [ ] What does the forest of Araucarias tell us about its own history?
- [ ] Why does science take so long to solve a problem?
- [ ] Compliance with the laws that made it mandatory to teach African History, African and Afro-Brazilian and indigenous culture in the curriculum of basic education
- [ ] Empowered IG: the rescue of the self-esteem of young people from public schools through empowerment and anti-racist education
- [ ] Narratives of young scientists and the experience with scientific research in Brazilian High School
- [ ] Mathematical models for predicting the COVID-19 epidemic in the city of Porto Alegre
- [ ] Children are not small adults: the development of specific medicines for children
- [ ] Hereditary cancer: who is at risk and how to prevent?

- [ ] How can biology and informatics help us understand neurological tumors?
  
- [ ] The future has arrived: editing DNA for the treatment of genetic diseases
  
- [ ] Covid-19 Analysis Network - Dissemination of scientific information on the pandemic
  
- [ ] Development of a drink fermented with probiotics to promote oral health
  
- [ ] Evaluations of hygienic and sanitary conditions in markets and on the streets: the case of Maputo in Mozambique.
  
- [ ] Sociobiodiverse engineering: a conversation on engineering, social technology, biodiversity and native fruits
  
- [ ] Use of natural dye extracted from annatto seed as a substitute for synthetic dyes in beverages

Thanks for participating!

## Appendix 2

### *Experience Report of the Project by Students of the Postgraduate Program*

In this questionnaire we are collecting information about your experience as a participant in the Scientist at School project.

This activity aims to bring teachers and students closer to the postgraduate program in Medical Sciences at UFRGS with the school community of Porto Alegre, through contact with students and teachers from the municipal education network.

The objective is to disseminate the research and content developed in the program for society and allow the exchange of knowledge between those involved.

As a result, we hope to bring together the scientific knowledge that is produced in the university's graduate program with society, assisting in the formation of teachers and promoting initial contact of students with research and with university researchers.

Email address:

  

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Level at which you are graduating:

Master's

PhD

1. Rate the broadcasts displayed in the "Scientist at School" project:

Live Stream	<b>01</b> (Antibody donation as a treatment for COVID-19)	<b>02</b> (What is our place in the universe?)	<b>03</b> (Science and time to solve a problem)	<b>04</b> (Empowered IG)	<b>05</b> (Nature Deficit Disorder)
Excellent					
Good					
Regular					
Poor					

2. Considering the previous question, justify its classification by presenting the main QUALITIES:

01 \_\_\_\_\_

02 \_\_\_\_\_

03 \_\_\_\_\_

04 \_\_\_\_\_

05 \_\_\_\_\_

3. Considering the question number 1, justify your classification by presenting the main LIMITATIONS:

01 \_\_\_\_\_

02 \_\_\_\_\_

03 \_\_\_\_\_

04 \_\_\_\_\_

05 \_\_\_\_\_

4. In your opinion, which topic was most relevant and why?

1 - Donation of antibodies as a new treatment for COVID-19

2 - What is our place in the Universe? – The discovery of new galaxies by researchers from UFRGS

3 - Why does science take so long to solve a problem?

4 - Empowered IG: the rescue of the self-esteem of young people from public schools through empowerment and anti-racist education

5 - Nature Deficit Disorder: can the lack of contact with nature make us sick?

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5. In your opinion, which topic had the “least impact” and why?

6. Briefly explain your participation:

Live 1 - \_\_\_\_\_

Live 2 - \_\_\_\_\_

Live 3 - \_\_\_\_\_

Live 4 - \_\_\_\_\_

Live 5 - \_\_\_\_\_

7. Name a point you considered striking in the stream (an event, speech or question, curiosity, something that has held your attention at that moment, a memory):

Live 1 - \_\_\_\_\_

Live 2 - \_\_\_\_\_

Live 3 - \_\_\_\_\_

Live 4 - \_\_\_\_\_

Live 5 - \_\_\_\_\_

8. Classify the "Scientist at School" activity developed at EMEF Ildo Meneghetti:

Excellent

Good

Regular

Poor

9. Considering the previous question, justify its classification by presenting:

The main QUALITIES observed in the project: \_\_\_\_\_

\_\_\_\_\_

The main LIMITATIONS observed in the project:

\_\_\_\_\_

\_\_\_\_\_

10. Do you consider the fact that the project is Distance Learning a limitation?

Yes

No

Maybe

Explain: \_\_\_\_\_

\_\_\_\_\_

11. Would you consider expanding the project to other schools?

Yes



[ ] No

[ ] Maybe

12. Cite up to 4 changes or improvements you would make to the project:

1<sup>a</sup> \_\_\_\_\_

2<sup>a</sup> \_\_\_\_\_

3<sup>a</sup> \_\_\_\_\_

4<sup>a</sup> \_\_\_\_\_

13. How do you believe that the pandemic affects the dissemination of science to communities?

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14. Briefly report how do you think the "Scientist at School" project contributed to your qualification?

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### **Appendix 3**

*Report of Experience Project Scientist at School by the Invited Moderators*

In this questionnaire we are collecting information about your experience as a participant in the Scientist at School project.

This activity aims to bring together professors and students of the postgraduate program in Medical Sciences of UFRGS of the community of Porto Alegre, through contact with students and teachers of the municipal education network.

The objective is to disseminate the research and content developed in the program for society and allow the exchange of knowledge between those involved.

As a result, we hope to bring together the scientific knowledge that is produced in the UFRGS postgraduate's program to society, assisting in the formation of teachers and promoting initial contact of students with research and with researchers from the University.

Email address:

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1. Which Live did you participate in? How do you rate this Live?

1 - Donation of antibodies as a new treatment for COVID-19

2 - What is our place in the Universe? – The discovery of new galaxies by researchers from UFRGS

3 - Why does science take so long to solve a problem?

4 - Empowered IG: the rescue of the self-esteem of young people from public schools through empowerment and anti-racist education

5 - Nature Deficit Disorder: can the lack of contact with nature make us sick?

Live Stream	<b>01</b>  (Antibody donation as a treatment for COVID-19)	<b>02</b>  (What is our place in the universe?)	<b>03</b>  (Science and time to solve a problem)	<b>04</b>  (Empowered IG)	<b>05</b>  (Nature Deficit Disorder)
Excellent					
Good					
Regular					
Poor					

2. Considering the previous question, justify its classification by presenting the main QUALITIES you found (language, material, didactics):

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3. Considering the question number 1, justify its classification by presenting the main LIMITATIONS you found (language, material, didactics):

4. Name a point you considered striking on Live (an event, speech or question, curiosity, something that has caught your attention at that moment, a memory):

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5. Regarding the "Scientist at School" activity developed at EMEF Ildo Meneghetti, classify it:

Excellent

Good

Regular

Poor

6. How do you believe that the pandemic affects the dissemination of science to communities?

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7. Do you consider the fact that the project is Distance Learning a limitation?

Yes

No

Maybe

8. Briefly report how do you think the "Scientist at School" project contributed to you?

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#### **Appendix 4**

##### *Postgraduate Students Subjective Experience and Opinion Report by Live Stream*

**First live - “Donation of antibodies as a new treatment for COVID-19”** (written by Andreia Luciana Bard and Raul Marques Rodrigues)

The first live stream of the series was in August 2020 regarding one of the most hot topics in the media at the time: antibody donation as a new treatment for COVID-19. We had as guest a PhD hematologist from the HCPA Blood Bank and University professor. He detailed the experimental treatment realized with convalescent plasma from patients affected with the virus. It is a multicentric worldwide study being done locally near us. This treatment is traditionally attempted in various scenarios and pathologies, and with COVID cases rising it gained space as one of the first attempted therapeutic approaches. In order to detail the theoretical basis behind the treatment were presented in accessible language basic concepts related to hematology and immunology, such as antibodies, immune cell response, plasma composition, molecular compatibility, cell surface receptors, among others.

We believe there was an adequate general comprehension of the innate and acquired immunity process related to virus infection. Because we were in the midst of the pandemic, many questions arose, both from teachers and students of the school and from the external public, since at that time there was little provision for vaccines or other treatments. It was possible to immediately observe the interest of the community in the subject and it was very satisfactory to clarify doubts and adequately inform about such a pertinent and necessary subject. General doubts arose about other issues of the pandemic: pharmacological treatment with chloroquine, doubts of correct prevention behaviours and, obviously, empirical "predictions" about the duration of social isolation. As a first experience in the technical question we had a good transmission and also proper monitoring of the moderators, responsible for capturing the questions in the YouTube chat and passing on to the speaker, on another platform. The perception that we as scientists have had with this experience is that there is a lot of incorrect information circulating in the

media, causing confusion in people and spreading misinformation and sometimes panic. In our work environment or social bubble certain theoretical and basic concepts relating to disciplines of biology and chemistry are well known, however, sometimes we forget that it is not so for the whole population. We also note that young citizens in general report on unreliable digital sources, such as social networks. This reaffirmed the importance of such a project, which adequately elucidates and guides based on recent scientific evidence and recommendations from health agencies. Furthermore, we believe that this contact initiated a process of deconstruction of the figure of the scientist, traditionally considered to be an inaccessible knowledge holder.

**Third live - “Why does science take so long to solve a problem?”** (written by Ândrea Celestino de Souza and Sandielly Rebeca Benitez da Fonseca)

The third live was of great importance for the project, as it was the first in which the theme was selected by the school community, which was the most voted among the twenty-two suggested themes. The subject addressed in the live was "Why does science take so long to solve a problem?" and it demonstrated how it is possible to build a scientific method through simple questions and in an extremely didactic way. We often think of something complex to start a project, but this approach has shown that we should start from something simple and gradually improve. Working on a controversial theme that is the use of the mask, the speaker exemplified very well the bases of the research and proved, within its limitations, through the scientific method how important its use is. We believe that the knowledge that the children obtained will probably be disseminated in their family environment and will probably start charging family members for wearing the mask after realizing that it is extremely important. When seeing the proof that the use of the mask is beneficial, the child sees meaning in wearing it and begins to use it because he understands the importance and not because they are told so. In addition, the speaker instigated the critical sense of her audience by encouraging them to question before believing everything they say.

The use of practical and contemporary examples experienced during the pandemic enabled all the children

who were watching and we researchers to feel involved independently of our area of research and performance. We stopped being researchers for a moment and became spectators like all the children who were there, as if we were discovering again the scientific method, only this time, by a simpler look, didactic, contextualized and amazed. In this live we had some technical problems at the beginning of the transmission, which made us apprehensive because we could not identify the problem, but this experience also showed the importance of each student's participation in the project as well as the role played by each one and even with the problems we had at the beginning of the broadcast the audience remained connected to live and all were very understanding and patient.