42290 - Técnicas de Comunicação e Apresentações
Aula 4
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How to communicate science

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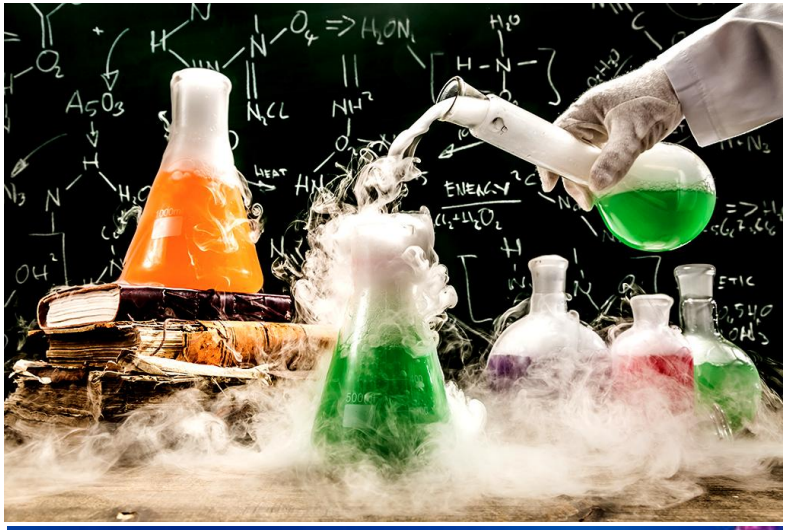
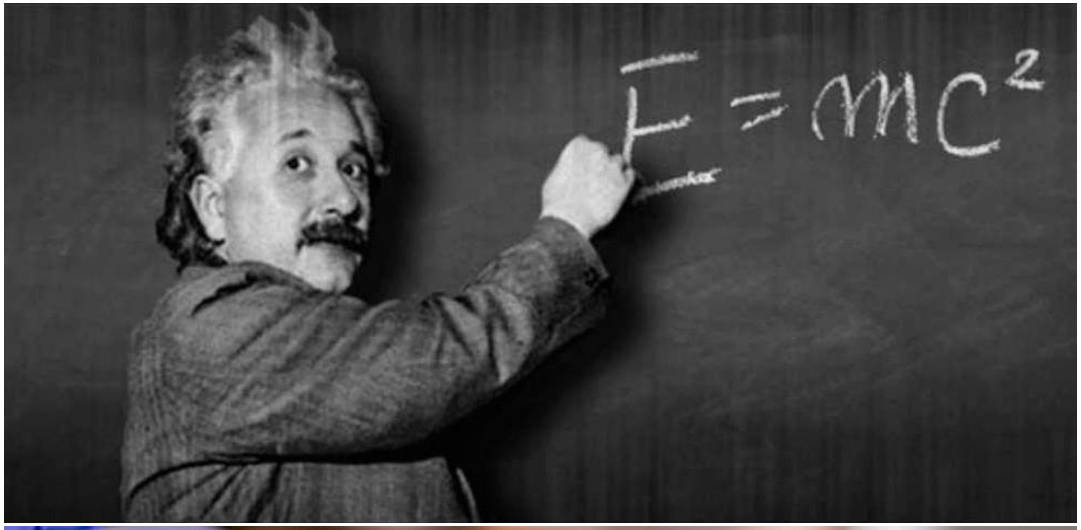
Outline

- What is science?
- Why should we communicate science?
- How to talk about science
- Different ways/channels to communicate science
- Science outreach
- Take-home message
- Bibliography

What is science?





What is science?

by **Archimedes**
Greek Mathematician

"The most exciting phrase to hear in science, the one that heralds new discoveries, is not "Eureka!" but "that's funny…" by **Isaac Asimov**, American Biochemist

"The most beautiful experience we can have is the mysterious. It is the fundamental emotion that stands at the cradle of true art and true science." by **Albert Einstein**, German Theoretical Physicist

"If I have seen further, it is by standing on the shoulders of Giants." by **Isaac Newton**, English Physicist and Mathematician

"Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less." by **Marie Skłodowska Curie**, French Physicist and Chemist

Why should we communicate science?

"Nothing in science has any value to society if it is not communicated, and scientists are beginning to learn their social obligations."

by **Anne Roe** (The Making of a Scientist, 1953), American clinical psychologist

Why should we communicate science?

"Science is not finished until it's communicated. The communication to wider audiences is part of the job of being a scientist, and so how you communicate is absolutely vital."

by **Sir Mark Walport** (2013), UK Government Chief Scientific Advisor

How to talk about science?

1. Know your audience

2. Mind your language

3. Build a narrative / storytelling

How to talk about science?

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How to talk about science?

2. Mind your language

- Keep it simple (less is more…)
- Be brief, be concise and be clear (get to the point – elevator pitch)
- Use short sentences
- Avoid jargon (abbreviations and acronyms, long words, be careful with the use of words that have two meanings)

How to talk about science?

2. Mind your language

- Avoid vague language
- Use analogies and metaphors (whenever appropriate)
- Adapt your language to and involve your audience by asking for feedback or using rhetorical questions
- Vary the pace and the tone of your voice
- Enjoy pauses

How to talk about science?

3. Build a narrative / storytelling

Channels to communicate science? Conventionally…

Scientific Articles

nature chemistry

ARTICLES

https://doi.org/10.1038/s41557-021-00758-3

Check for updates

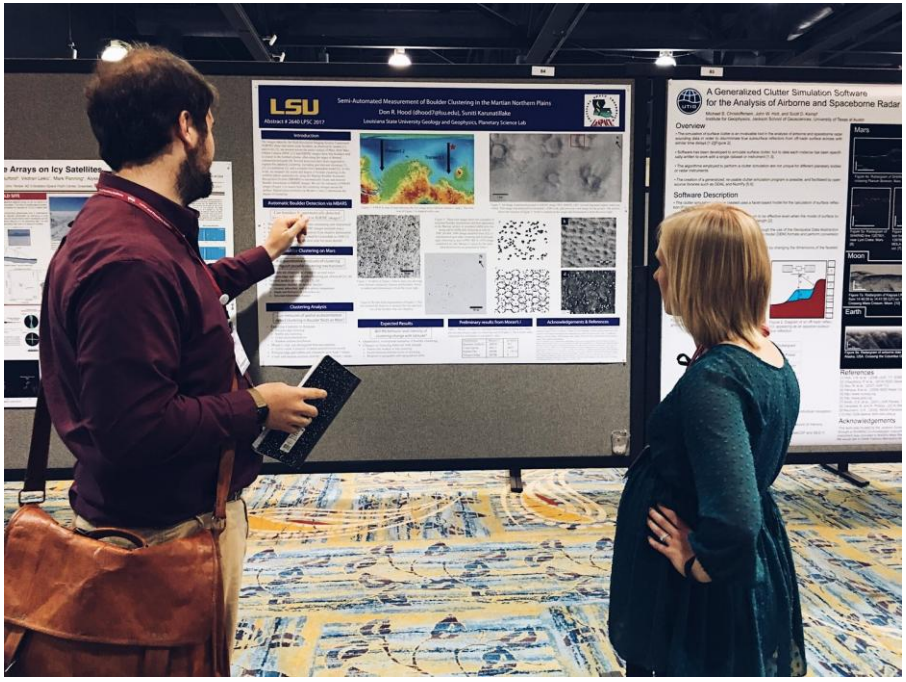
A glycan gate controls opening of the SARS-CoV-2 spike protein

Terra Sztain[1,8], Surl-Hee Ahn[1,8], Anthony T. Bogetti[2], Lorenzo Casalino[1], Jory A. Goldsmith[3], Evan Seitz[4], Ryan S. McCool[3], Fiona L. Kearns[1], Francisco Acosta-Reyes[5], Suvrajit Maji[5], Ghoncheh Mashayekhi[6], J. Andrew McCammon[1,7], Abbas Ourmazd[6], Joachim Frank[4,5], Jason S. McLellan[3], Lillian T. Chong[2]✉ and Rommie E. Amaro[1]✉

SARS-CoV-2 infection is controlled by the opening of the spike protein receptor binding domain (RBD), which transitions from a glycan-shielded 'down' to an exposed 'up' state to bind the human angiotensin-converting enzyme 2 receptor and infect cells. While snapshots of the 'up' and 'down' states have been obtained by cryo-electron microscopy and cryo-electron tomography, details of the RBD-opening transition evade experimental characterization. Here over 130 μs of weighted ensemble simulations of the fully glycosylated spike ectodomain allow us to characterize more than 300 continuous, kinetically unbiased RBD-opening pathways. Together with ManifoldEM analysis of cryo-electron microscopy data and biolayer interferometry experiments, we reveal a gating role for the *N*-glycan at position N343, which facilitates RBD opening. Residues D405, R408 and D427 also participate. The atomic-level characterization of the glycosylated spike activation mechanism provided herein represents a landmark study for ensemble pathway simulations and offers a foundation for understanding the fundamental mechanisms of SARS-CoV-2 viral entry and infection.

Channels to communicate science? Conventionally…

Talks / Posters in scientific conferences

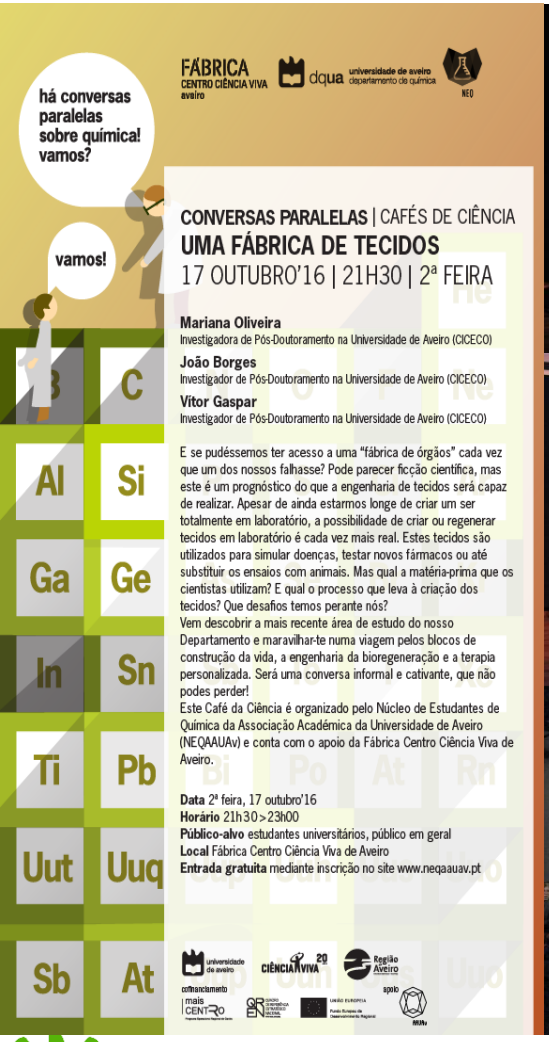


Channels to communicate science? Conventionally…

TV, Radio, and Newspapers

Channels to communicate science? Conventionally…

Science Cafes



Channels to communicate science? Social media!

Social Media

+ IMPACT!

+retweets = +citations
+posts = +citations
+news = +citations
+views = +citations
+... = +IMPACT

Also… science outreach

Science Exhibitions

Visits to School

EU Researchers' Night

Diário de Notícias

Cativar alunos para os cursos de química com 45 minutos de magia

27 DE DEZEMBRO DE 2016 ÀS 00:35

Joana Capucho

Químicos Jovens vão às escolas secundárias incentivar estudantes a seguir cursos superiores relacionados com a área. Há um mágico, formado em química, que os acompanha

Estamos perante dois copos cheios: um com óleo vegetal, outro com água à qual foi adicionado um corante vermelho. Como é que se transfere o líquido de um para o outro usando apenas uma carta? Fácil. Coloca-se a carta sobre o copo com a solução mais densa - o da água - vira-se ao contrário e coloca-se em cima do copo com óleo. Faz-se uma pequena abertura com a carta e a magia acontece: a água vermelha passa para o copo do óleo e este sobe. Com um simples truque, durante uma apresentação do Grupo de Químicos Jovens da Sociedade Portuguesa de Química, o ilusionista e químico Filipe Monteiro demonstrou em 45 minutos quatro conceitos aos alunos da Escola Secundária Homem Cristo, em Aveiro: "A densidade, a imiscibilidade, a força da gravidade e a força do ar."

Take-home message

- Science is an integral part of the culture heritage of mankind.
- Science communication fosters collaboration and innovation across disciplines.
- Science should be communicated to all audiences – science communication is an integral part of our role as Scientists.

Take-home message

- Different platforms can be used to effectively communicate science and build support for science.

- Science communication encourages non-scientist audiences to get involved, and helps them to understand what scientists do, how they make discoveries, and their impact and wider relevance to the whole society.

- Science communication contributes to making science more diverse and inclusive.

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