

# Introduction to science communication: How to get your science heard?

Olya Vvedenskaya, MD, PhD  
Wednesday Evening Workshop

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## **OLYA VVEDENSKAYA, MD, PHD**

### **Academia:**

MD – Russian State Medical University, Russia and University of Pittsburgh, USA 2012

PhD – Humboldt University and Charite Medical University, Berlin, Germany 2017

Postdoc - MPI-CBG, Dresden , Germany 2017-2021

### **Industry:**

Manager - Spectroswiss, Lausanne, Switzerland 2021-2022

Science communications officer - Lipotype, Dresden, Germany 2022-...

### **Non-profit work:**

Dragonfly Mental Health co-founder 2019-...

Warenje scientific community building co-founder 2022-...

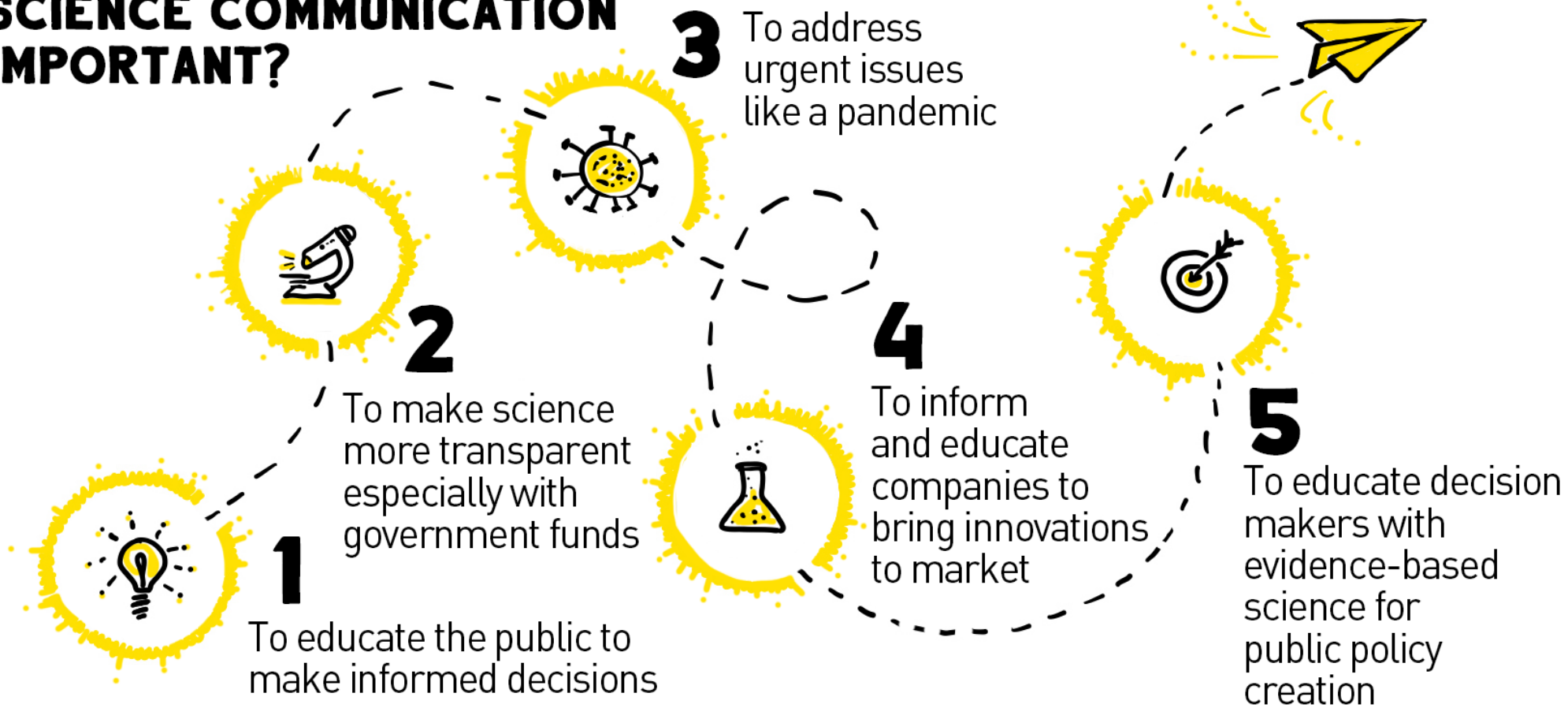
Sci.STEPS scientific mentoring co-founder 2022-...





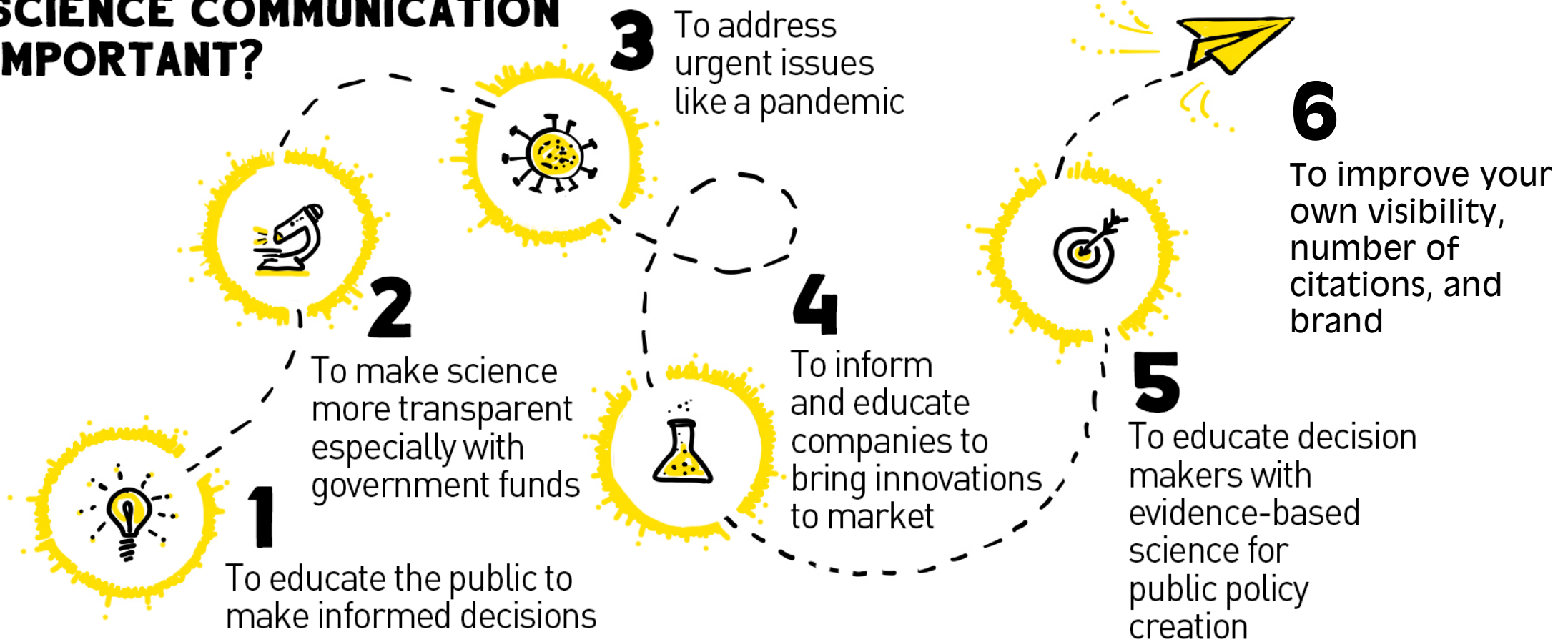
## WHAT ARE THE BENEFITS OF GETTING SOME KNOWLEDGE IN SCI COM?

### WHY IS GOOD SCIENCE COMMUNICATION IMPORTANT?



## WHAT ARE THE BENEFITS OF GETTING SOME KNOWLEDGE IN SCI COM?

### WHY IS GOOD SCIENCE COMMUNICATION IMPORTANT?



**WHAT SKILLS AND QUALITIES THAT YOU ALREADY HAVE AS MASS SPECTROMETRISTS ARE USEFUL IN COMMUNICATING SCIENCE?**



Low-key data analysis



Data-driven decision-making



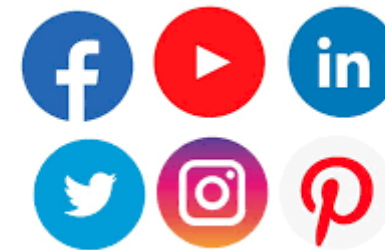
Common sense



Organizational skills



Communicational skills



An idea about social media

**WHAT SKILLS AND QUALITIES THAT YOU ALREADY HAVE AS MASS SPECTROMETRISTS ARE USEFUL IN COMMUNICATING SCIENCE?**

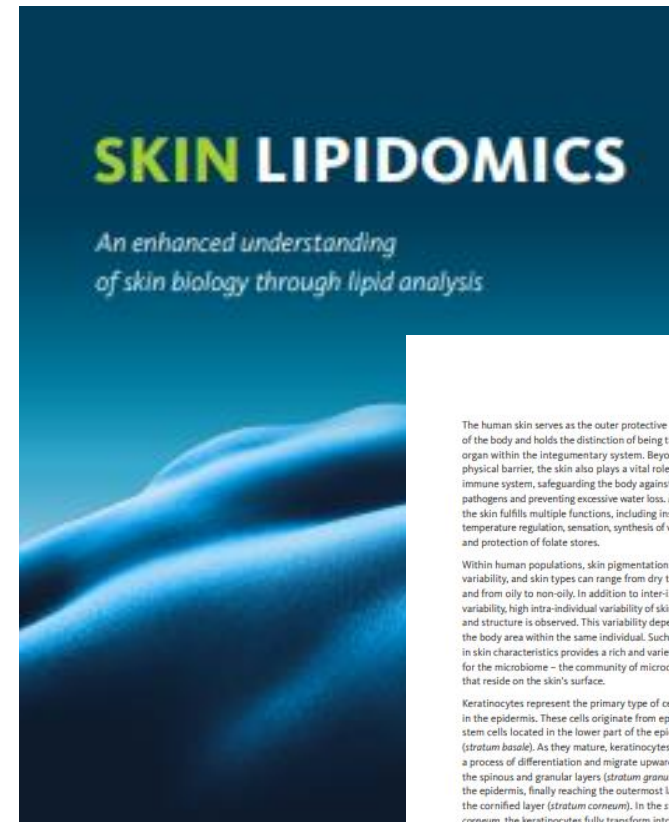
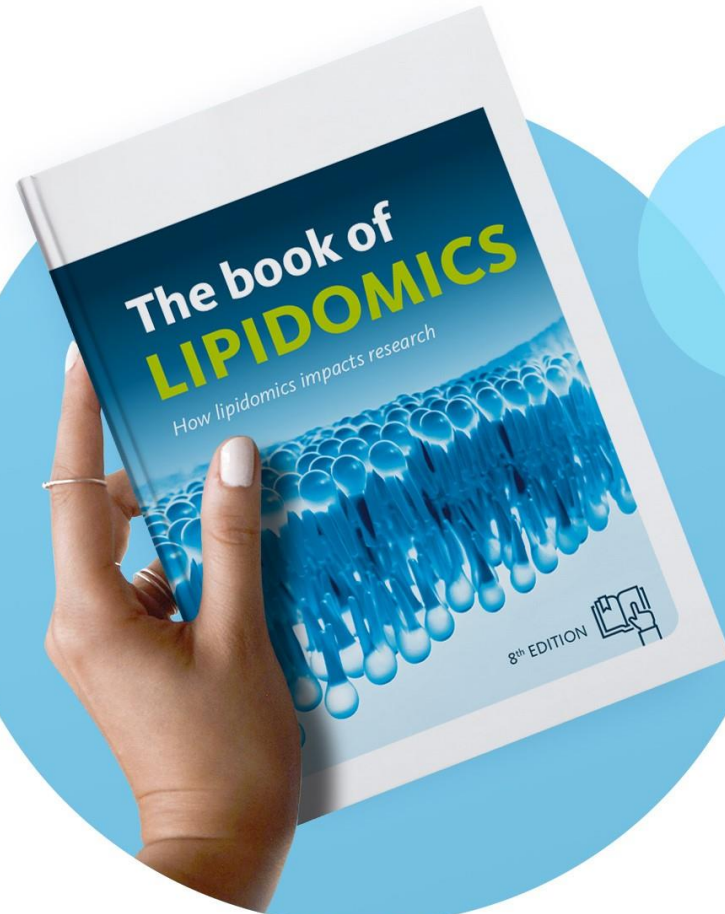
Storytelling is a skill one can develop



## WHAT MASS SPECTROMETRY KNOWLEDGE IS RELEVANT FOR OUTSIDE OF A LAB?

- Creating sci-comm materials
- Creating software tutorials and other teaching materials
- Creating brochures and other sales support materials
- Testing software
- Creating and hosting webinars
- Writing case studies
- Publishing interviews
- Social corporate responsibility

## EXAMPLES: BROCHURES AND BOOKS



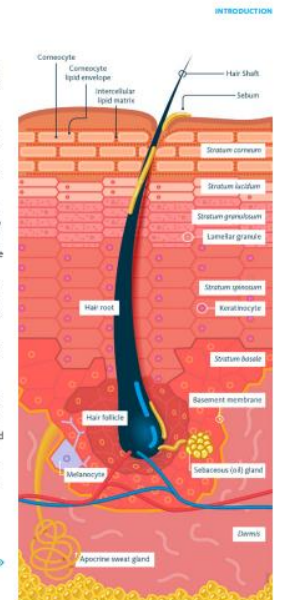
The human skin serves as the outer protective covering of the body and holds the distinction of being the largest organ within the integumentary system. Beyond its physical barrier, the skin also plays a vital role in the immune system, safeguarding the body against harmful pathogens and preventing excessive water loss. Moreover, the skin fulfills multiple functions, including insulation, temperature regulation, sensation, synthesis of vitamin D, and protection of folate stores.

Within human populations, skin pigmentation exhibits variability, and skin types can range from dry to non-dry and from oily to non-oily. In addition to inter-individual variability, high intra-individual variability of skin moisture and structure is observed. This variability depends on the body area within the same individual. Such diversity in skin characteristics provides a rich and varied habitat for the microbiome – the community of microorganisms that reside on the skin's surface.

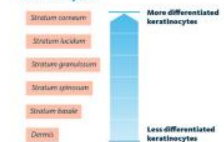
Keratinocytes represent the primary type of cells found in the epidermis. These cells originate from epidermal stem cells located in the lower part of the epidermis (*stratum basale*). As they mature, keratinocytes undergo a process of differentiation and migrate upward through the spinous and granular layers (*stratum granulosum*) of the epidermis, finally reaching the outermost layer called the cornified layer (*stratum corneum*). In the *stratum corneum*, the keratinocytes fully transform into corneocytes, which are tough, flattened cells that make up the protective barrier of the skin. Eventually, these corneocytes are shed off from the skin's surface through the natural process of exfoliation.

### Skin and hair follicle structure

Source: Lodigian (2018)



### Keratinocytes



Source: Lodigian (2018)

The hair follicle structure is a complex arrangement within the skin that surrounds and nurtures the hair shaft. Sebaceous glands secrete sebum through hair follicles that don't have ducts. Sebum, an oily waxy substance consisting of triglycerides, fatty acids, wax esters, squalenes/epoxy-squalenes, and cholesterol, serves as a natural moisturizer, protecting the skin from dehydration and helping to maintain its barrier function. Sebum also plays a role in lubricating the hair shaft, giving the hair its characteristic shine, and preventing it from becoming brittle. Researching the lipid composition of sebum can provide insights into skin health and hydration.



## EXAMPLES: ARTICLES FOR WEBSITES

About Lipids

Articles & Webinars

Resource Center

Lipidomics research in industry and academia

METABOLIC DISORDERS

DIET

ONCOLOGY

NEUROSCIENCE

DERMATOLOGY

SEASONS

PHARMA

MODEL SYSTEMS

ORGANELLES

MICROBIOLOGY

CLINICAL RESEARCH


BIOMARKER

OTHER

MULTIOMICS

WEBINARS

ARTICLES




ARTICLE

### Lipidomics in stratum corneum research

Lipotype

Lipidomics analysis of stratum corneum is essential in dermatology research and product development.

READ




UPCOMING WEBINAR

### Navigating cardiovascular diseases

The Lipidomics Webinar | Olya Vvedenskaya

Cardiovascular diseases are linked to changes in lipid metabolism. Lipidomics helps assess cardiovascular disease risk.

REGISTER



ARTICLE

### Lipidomics of extracellular vesicle subtypes

University of Basel, Pharmaceutical Sciences

Lipidomics analysis supports the preparation and analysis of nano plasma membrane vesicles (nPMVs).

READ

## EXAMPLES: ENTERTAINING MATERIALS



## WHAT IS HELPFUL TO KNOW WHEN STARTING YOUR SCI COMM JOURNEY?

- Who are your targeted groups? Who can benefit from this?
- How to measure the impact?
- How to promote your stories: search engine optimization (SEO)
- Keyword research like UberSuggest
- Google Analytics or any other analytics software
- Canva or any other visuals software
- AI tools like scienceOS that are specific for scientists and non-specific ones like chatGPT

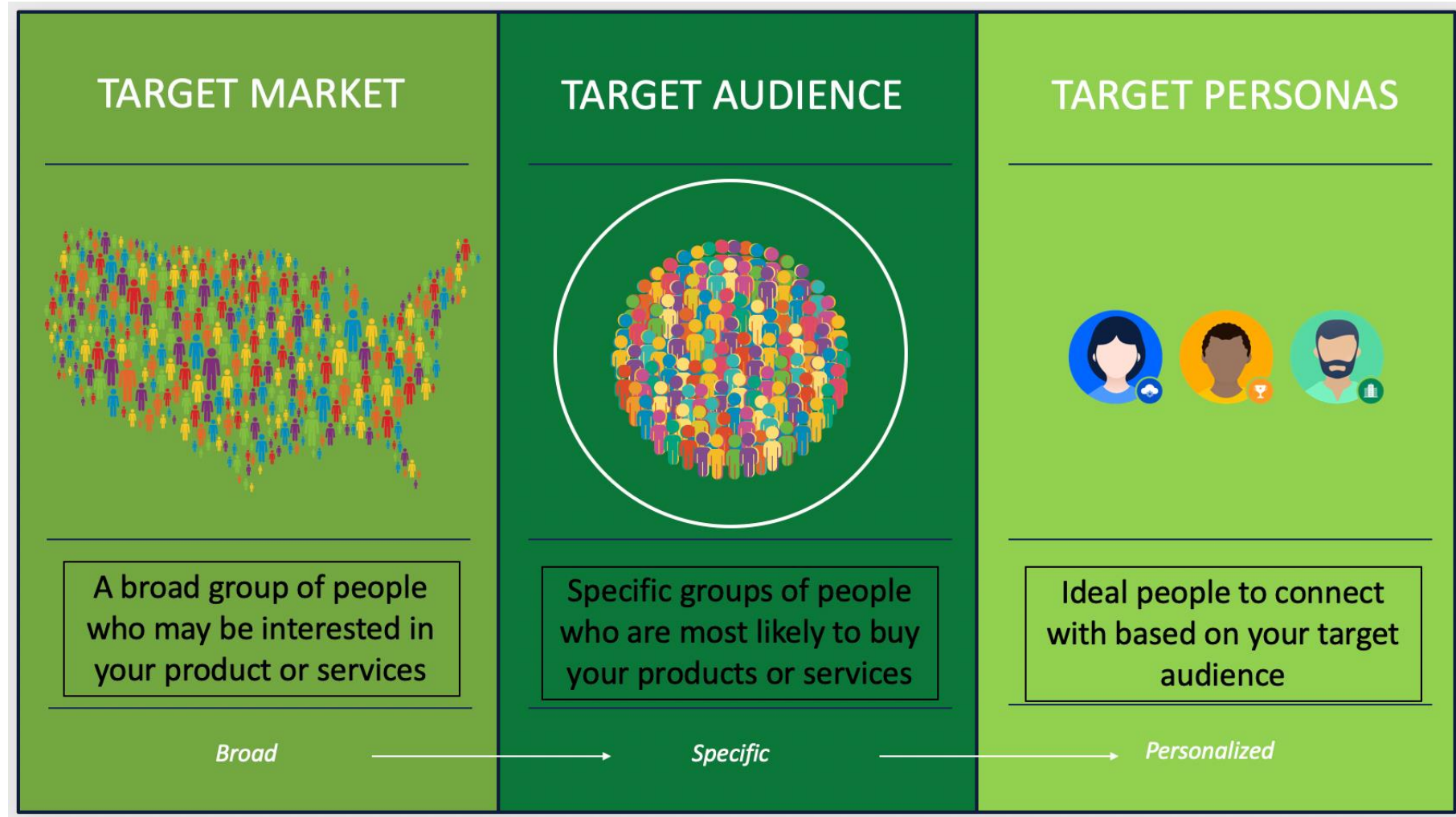


## **YOUR MESSAGE**

Think of a message about your research you want to tell the world



## WHAT IS A TARGETED GROUP?



## WHAT IS YOUR TARGETED GROUP?

- Who are the people you are telling your story to?
- What do they already know?
- What would you like them to learn with your message?



## YOUR TARGETED GROUP

In 5 mins please decide how you will present the main message (~30 sec) of your current research to one of these people:

- Your friend's grandma
- Master's trainee
- Your sister who is an international tax manager
- Your non-scientist friend who loves popular science
- A fellow scientist who may be interested in application of the same method you use but has no idea about mass spec
- Yellow pages journalist

## SEARCH ENGINE OPTIMIZATION

SEO, or Search Engine Optimization, is a set of optimization strategies for sites, blogs, articles, publications, and pages on the web, which aim to improve your position in organic search engine results.





## SEARCH ENGINE OPTIMIZATION

For every search, Google organizes the results by ranking the best answers first.

With this as your focus, you have a better chance to increase your visibility and clicks, receive more organic traffic, and escalate results with your online presence.

It is applicable to both, **scientific and non-scientific materials.**

## SEARCH ENGINE OPTIMIZATION

To achieve this, you need to prove to Google that you have the best answer and deserve to show up in the first position on the SERP (Search Engine Results Page).

This involves not just having great content, but offering usability, and helping Google read your pages.

## SEARCH ENGINE OPTIMIZATION

SEO depends on your targeted group.



## SEO: KEYWORDS

- Think of how your targeted group would google your research
- Create a 3-5 keywords of your choice
- Check if they fit to your targeted groups and how you would like to be searched



## SEO: EXAMPLE

We need to perform SEO for an article for a scientist who wants to know how to prepare for scientific-related relocation

- What are your suggested keywords?
- Let's see how the tool works and check real-life data

## SEO: EXAMPLE

Sci.STEPS scientific mentorship for early career researchers

- non-profit
- zero budget
- collection of requests

## SEO: EXAMPLE

We need to perform SEO for an article for a scientist who wants to know how to prepare for scientific-related relocation

Keywords suggestions:

## SEO: EXAMPLE

We need to perform SEO for an article for a scientist who wants to know how to prepare for scientific-related relocation

Keywords suggestions:

preparation to relocation, paperwork for relocation, new routines relocation, mentorship moving, immigration

EXCLUDE: new environment, change of environment

+/-: science, academia, phd, mentor, mentee, mentorship

SEARCH BY KEYWORDS

SEARCH BY WEBSITE

Discover new keywords | 0/3 Keywords Added

Enter 1-3 keywords [i.e. "meal delivery"]



Language

English



Location



United States



SEARCH



**Get Started:** Enter in a keyword and click "Search" to find all the related phrases that people search on Google.

**Tip:** Your search results will be more useful if the keywords you enter are closely related.

Discover new keywords | 2/3 Keywords Added

Enter 1-3 keywords (i.e. "meal delivery")



Language

English

Location



United States

SEARCH

relocation science ✕

relocation academia ✕

Clear All

## Keyword Ideas 🔍: relocation science, relocation academia

SUGGESTIONS (188)

RELATED (2)

QUESTIONS (46)

PREPOSITIONS (19)

COMPARISONS (32)

Volume ▾

SEO Difficulty ▾

CPC ▾

Keyword Filters ▾

BETA

ALL

PAGE 1 RANKING POTENTIAL

EXPORT TO CSV ▾

COPY TO CLIPBOARD ▾

UPDATE METRICS (0/200) ▾

ADD TO LIST ▾ 0 of 188 Selected

<input type="checkbox"/>	KEYWORDS <span>?</span>		VOLUME <span>?</span>	CPC <span>?</span>	PD <span>?</span>	SD <span>?</span>	UPDATED <span>?</span>
<b>YOUR KEYWORDS</b>							
<input type="checkbox"/>	relocation science	☰ Q ▾ <span>Generate Content With AI</span>	0	\$0.00	1	17	3 months <span>↻</span>
<input type="checkbox"/>	relocation academia	☰ Q ▾ <span>Generate Content With AI</span>	0	\$0.00	1	17	3 months <span>↻</span>
<b>KEYWORD IDEAS</b>							
<input type="checkbox"/>	relocation job	☰ Q ▾ <span>Generate Content With AI</span>	2,400	\$1.37	19	65	5 months <span>↻</span>
<input type="checkbox"/>	relocation specialist	☰ Q ▾ <span>Generate Content With AI</span>	880	\$2.68	45	52	5 months <span>↻</span>



Discover new keywords | 2/3 Keywords Added

Enter 1-3 keywords (i.e. "meal delivery")



Language

English

Location



United States

SEARCH

moving science ✕

moving academia ✕

Clear All

## Keyword Ideas 🔍: moving science, moving academia

SUGGESTIONS [340]

RELATED [25]

QUESTIONS [43]

PREPOSITIONS [42]

COMPARISONS [30]

Volume ▾

SEO Difficulty ▾

CPC ▾

Keyword Filters ▾

BETA

ALL

PAGE 1 RANKING POTENTIAL

EXPORT TO CSV ▾

COPY TO CLIPBOARD ▾

↻ UPDATE METRICS [0/200] ▾

ADD TO LIST ▾

0 of 340 Selected

<input type="checkbox"/>	KEYWORDS <span>?</span>		VOLUME <span>?</span>	CPC <span>?</span>	PD <span>?</span>	SD <span>?</span>	UPDATED <span>?</span>
<b>YOUR KEYWORDS</b>							
<input type="checkbox"/>	moving science	🔍 <span>▾</span> <span>Generate Content With AI</span>	320	\$0.00	1	19	3 months <span>↻</span>
<input type="checkbox"/>	moving academia	🔍 <span>▾</span> <span>Generate Content With AI</span>	30	\$0.00	9	23	6 months <span>↻</span>
<b>KEYWORD IDEAS</b>							
<input type="checkbox"/>	moving services jobs	🔍 <span>▾</span> <span>Generate Content With AI</span>	1,000	\$3.55	24	46	4 months <span>↻</span>
<input type="checkbox"/>	motion science meaning	🔍 <span>▾</span> <span>Generate Content With AI</span>	880	\$0.00	1	13	3 months <span>↻</span>

## SEO: EXAMPLE

We need to perform SEO for an article for a scientist who wants to know how to prepare for scientific-related relocation

Keywords to use:

moving + research/science/graduate/academia +/- phd/postdoc  
preparation + moving + research/science/graduate/academia

-> Strategically placed this in 80% or paragraphs

## WHAT ABOUT SCIENTIFIC PUBLICATIONS?

The same goes for scientific publications!

## SEARCH ENGINE OPTIMIZATION AND AI-DRIVEN LITERATURE RESEARCH TOOLS



Henri Deda

co-founder of scienceOS

genAI enhanced search engines show WAY less sources than a normal list-based search engine.

Usually it less than 10 results - often it's 5 or less for genAI search engines.

Only the VERY top results that a search engine retrieves will be featured in the genAI answer.

## SEARCH ENGINE OPTIMIZATION AND AI-DRIVEN LITERATURE RESEARCH TOOLS



Henri Deda

co-founder of scienceOS

Now, how do you get into these very top results varies a bit by the specifics of the search engine. But in the end, your best chances are by using the language/keywords/phrases/questions of your target audience.

Because this is what they will type into their system, and this is the data that the search engine part will use to find the top results.

## SEARCH ENGINE OPTIMIZATION AND AI-DRIVEN LITERATURE RESEARCH TOOLS



Henri Deda

co-founder of scienceOS

Take the following into account: what is currently difficult to assess is how fast will mankind progress from keyword-based search to question-based search - I believe it will be fast.

So I recommend to look beyond JUST keywords but look for phrases and questions that people ask.



## SEARCH ENGINE OPTIMIZATION AND AI-DRIVEN LITERATURE RESEARCH TOOLS



Henri Deda

co-founder of scienceOS

We will all need to optimize for more than just being in the top of the list. Now we have to consider what the reader actually wants to read as well.

And I think this is very good for users!

## (GOOGLE) ANALYTICS

Google Analytics is a tool to track user behavior on your website.

- How many people visit the site?
- Which pages they view?
- How long they stay?
- Where do they come from?

## GOOGLE ANALYTICS

- Audience understanding
- Content optimization
- Performance tracking
- Evidence-based decision making
- Demonstrating impact

## GOOGLE ANALYTICS: EXAMPLE

For article for a scientist who wants to know how to prepare for scientific-related relocation

# GOOGLE ANALYTICS: EXAMPLE

For article for a scientist who wants to know how to prepare for scientific-related relocation

The screenshot shows the Sci.STEPS website interface. At the top, there is a navigation bar with the Sci.STEPS logo and several menu items: Sci.STEPS, Calls, In.SIGHTS, Consulting, What's new, More, Donate, and RU. Below the navigation bar, there are six article cards arranged in a 2x3 grid. Each card features an illustration, a title, and a short description.

- Card 1:** Illustration of the Statue of Liberty and various university logos (UCLA, UPenn, NYU, WashU, CalTech, MIT). Title: **How to apply for a Ph.D. abroad: USA in focus**. Description: A personal journey by Dr. Valentin Slepukhin.
- Card 2:** Illustration of a scientist at a microscope and a telescope. Title: **Scientific pivoting: How to switch an academic field?**. Description: Considerations if you are contemplating a career switch.
- Card 3:** Illustration of a person surrounded by puzzle pieces and question marks. Title: **Searching for a Ph.D. position abroad: where to start?**. Description: How to stop procrastinating and start looking for a position in a graduate school?
- Card 4:** Illustration of a robot wearing a graduation cap. Title: **AI for scientists**. Description: How can AI help scientists with their daily work?
- Card 5:** Illustration of a person with a backpack and a plane. Title: **Research, Relocation, and Resilience: Moving 101**. Description: Essentials you need to know when preparing yourself for moving.
- Card 6:** Illustration of two people shaking hands with social media icons. Title: **Targeted Networking 101: Step-by-Step**. Description: How to reach out to people of your interest?

## GOOGLE ANALYTICS: EXAMPLE

For article for a scientist who wants to know how to prepare for scientific-related relocation



**Research, Relocation, and Resilience:**  
**Moving 101**

Essentials you need to know when  
preparing yourself for moving.

## GOOGLE ANALYTICS: EXAMPLE

For article for a scientist who wants to know how to prepare for scientific-related relocation



**Research, Relocation, and Resilience:**  
**Moving 101**

Essentials you need to know when preparing yourself for moving.

6-9 months for search engines to pick up!



# Research, Relocation, and Resilience: Moving 101

Essentials you need to know when preparing yourself for moving.

*Text and graphics by [Julia Kolodiazhnaia](#)*

*Illustrations by [George Mathew](#)*

*Editing by [Ksenia Kuznetsova](#)*

- Embrace the emotional rollercoaster of moving to a new country
- Upon arrival to a new place, focus on covering your basic needs first and and gradually work towards optimisation
- Creating a sense of belonging by customising your surroundings is crucial as you navigate your new life

So, you have [discussed your relocation with your future colleagues](#), the housing is booked, suitcases are packed, and even the flight is already behind you. Here it is - a new life in a new place! New experiences, exciting adventures, and, unfortunately, the stress of moving. Here's our brief (and very subjective) guide on how to move countries for a [Ph.D.](#) or postdoc position and stay sane:

## **Step 0: Be mentally prepared for the emotional roller coaster of moving**

At the initial stage of your stay in the new place (the duration of this stage is very individual), you are very likely to experience a mix of "honeymoon" joy, because everything is so new and exciting, with a feeling of being completely lost, because you have no idea how things work, starting with the most basic tasks. This applies particularly to those preparing for a move associated with PhD or postdoctoral work, for whom moving is intertwined with a research career. Don't blame yourself for not feeling as excited as you thought you would be about this new "better" life; [many immigrants go through this as well](#).

# GOOGLE ANALYTICS: REAL-LIFE DATA



## GOOGLE ANALYTICS: REAL-LIFE DATA

Users ▼ by Country ID ▼



COUNTRY

Russia

United States

Germany

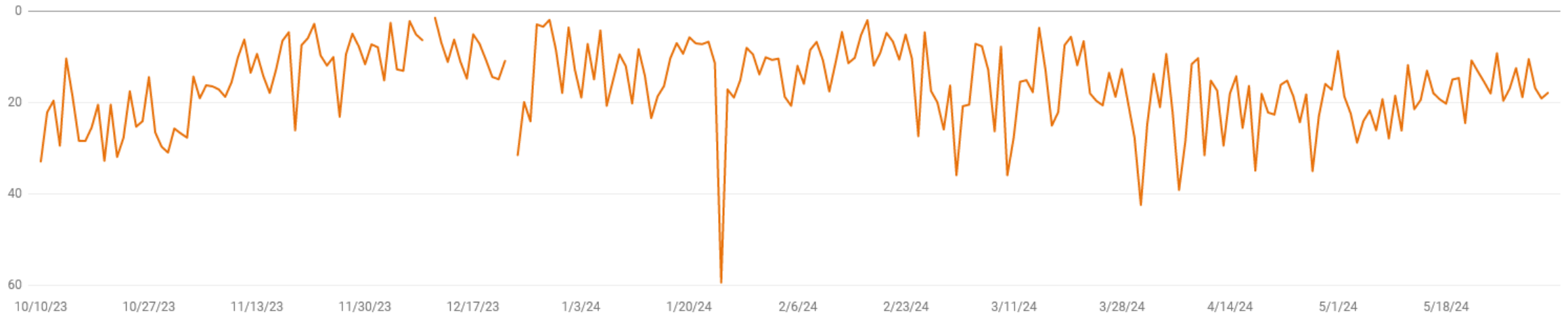
Switzerland

United Kingdom

Netherlands

France

# GOOGLE ANALYTICS: REAL-LIFE DATA



QUERIES

PAGES

COUNTRIES

DEVICES

SEARCH APPEARANCE

DATES

Top pages

↑ Position

<https://www.scisteps.org/more/join-us/become-a-mentee>

1

<https://www.scisteps.org/call-2024/mentors>

1.4

<https://www.scisteps.org/more/join-us>

1.5

<https://www.scisteps.org/to-read>

2

## SEARCH ENGINE OPTIMIZATION

SEO, or Search Engine Optimization, is a set of optimization strategies for sites, blogs, articles, publications, and pages on the web, which aim to improve your position in organic search engine results.



## SOCIAL MEDIA

- Treat your social media as a small news agency – perform triage
- Keep your targeted groups in mind
- Different platforms are good for different targeted groups and different goals
- Plan outreach, schedule, post regularly, add visuals, use templates
- (Always) collect data!

## TO CONCLUDE



### **Applying these tools to get your science heard is helpful**

- Know your targeted groups
- Use SEO
- Use tools to simplify your life
- Measure and track the success
- Test your theories and adapt your strategies

# The Word of Mass Spectrometry vol.2

*Scientific communication: first steps with Lipotype*



## You will get:

- Training with a science communication coach
- Running social media experience
- Creating a case study know-how
- Corporate communication skills



**Application opens in  
August 2024**



*Program duration: October 2024*



## **SPECIAL THANKS**

Lipotype and Marketing Team

Liz Pearson and Stella Betancourt and Career Development Interest Group

FeMS+ (Take a pin!) and Anne Bendt

Sci comm interns of 2023: Mariia Kuzina, Saraj Cabrera, and Kateryna Ivanova

My twin sister Anya (ASMS fan #1)

## Discussion

**What would be your steps to get more hands-on experience in communicating (your) science?**

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