



Engaging society: How public outreach meets Open Science

JUNE 24, 2021

My background



- 2010: PhD
(Toxicogenomics department)
- 2011-2014: Two postdocs



- Postdoc
- Project leader
- Data steward and project manager



Tasks

- Data steward → data management in MERLN (from experiment planning to data archiving) and promoting Open Science behavior
- Member of Open Science Community Maastricht (OSCM) → faculty ambassador



Rianne Fijten
Founder



Egon Willighagen
Founder



Matthijs Sloep
Founder



Dennie Hebels
Open Science Ambassador
FHML



Emmy van den Heuvel
Open Science Ambassador UM
Campus Venlo



Gerasimos (Jerry) Spanakis
Open Science Ambassador FSE



Donna Yates
Open Science Ambassador FDR



Amanda Kaas
Open Science Ambassador FPN



Roman Briker
Open Science Ambassador SBE

Tasks

OSCM organizes events meant to stimulate the Open Science movement and the use of FAIR



- **FAIR Coffee lectures:** Regularly inspiring lectures in which researchers from UM and other universities are invited to show you how they implemented FAIR in their research



- **ReproducibiliTea:** Open Science journal clubs to discuss diverse issues, papers and ideas about improving science, reproducibility and the Open Science movement



- **FAIR Essentials workshop:** ½ day course to discover common research data management good practices. Attendees learn how to create FAIR data in practice and develop their own research data management FAIR roadmap

Tasks

- Project manager → projects to improve general operation of MERLN
 - Data management projects
 - Website development
 - Annual magazine
 - Coordinate education
 - Research grant overviews
 - Write non-research related grant proposals (e.g. Open Science, outreach)
- Outreach team → coordinate (part of) our science outreach activities



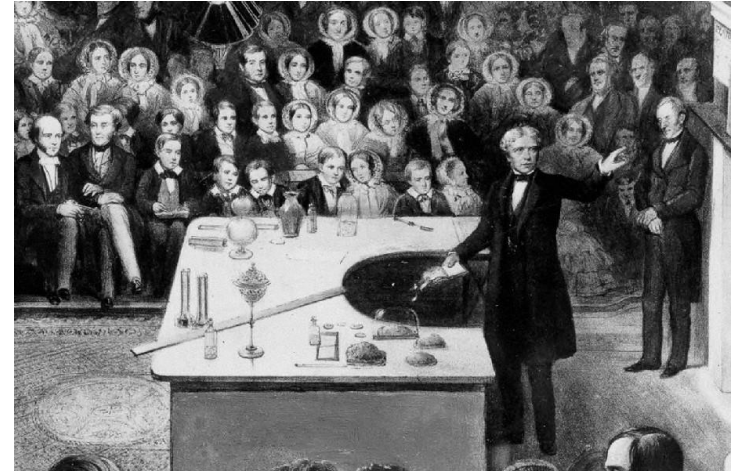
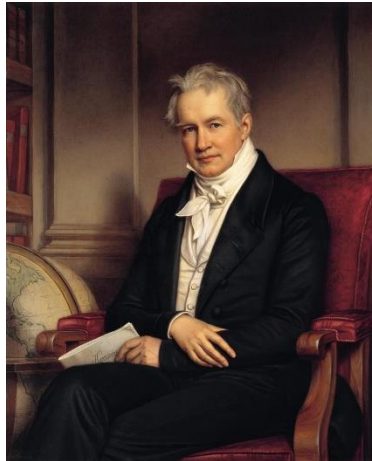
What is outreach?

- To connect, inform, and get feedback from (specific groups in) the community (on science topics)
- Examples:
 - Public talks/lectures/discussions/interviews
 - Visiting primary and secondary schools
 - Workshops for teachers and/or students
 - Supporting science fairs and similar events



A (very brief) history of outreach

- Lectures are probably the oldest form of science outreach, dating back to the 1820s:
 - Michael Faraday organized the first of the Royal Institution's Christmas Lectures in the 1820's
 - Alexander von Humboldt delivered a series of public lectures at the University of Berlin in 1827



A (very brief) history of outreach

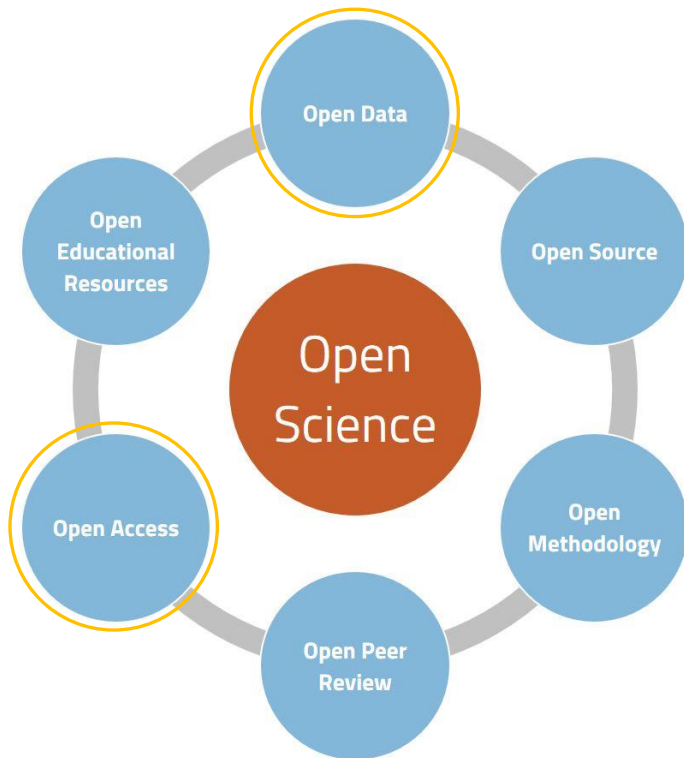
- Outreach became much more popular from the 1970's and 1980's onwards and a lot of effort was put into popularizing science, through lectures, books, documentaries, etc. but was still not very involved
- Famous scientists: Stephen Hawking, Neil DeGrass Tyson, Michio Kaku



- In the last 20-30 years outreach has become more involved: demo's, activities, workshops, etc.

Outreach and Open Science

- Open Science is the movement to make scientific research and its dissemination **accessible to all levels** of an inquiring society, amateur or professional.



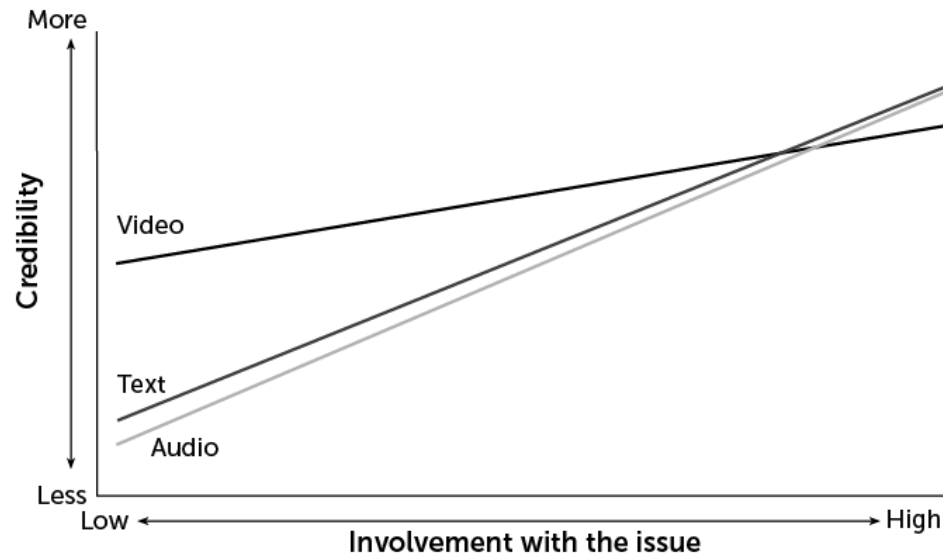
- Making results available (Open Data and Open Access) → However, just making results available is not enough → results are too technical to understand
- We should engage with potential users, funders and contributors to research, and with people whose lives may be affected by it, by interacting at the right level → That's where public outreach (or science communication) comes in

Why is outreach good?

- **Awareness:** Promoting public awareness (and understanding) of science and decreasing mistrust
- **Public support:** Having support of the general public to carry out science
- **Identify needs:** Find out what societal issues are considered most important
- **Education:** Making (informal) contributions to science education
- **Career motivation:** Motivating students to choose for a career in science

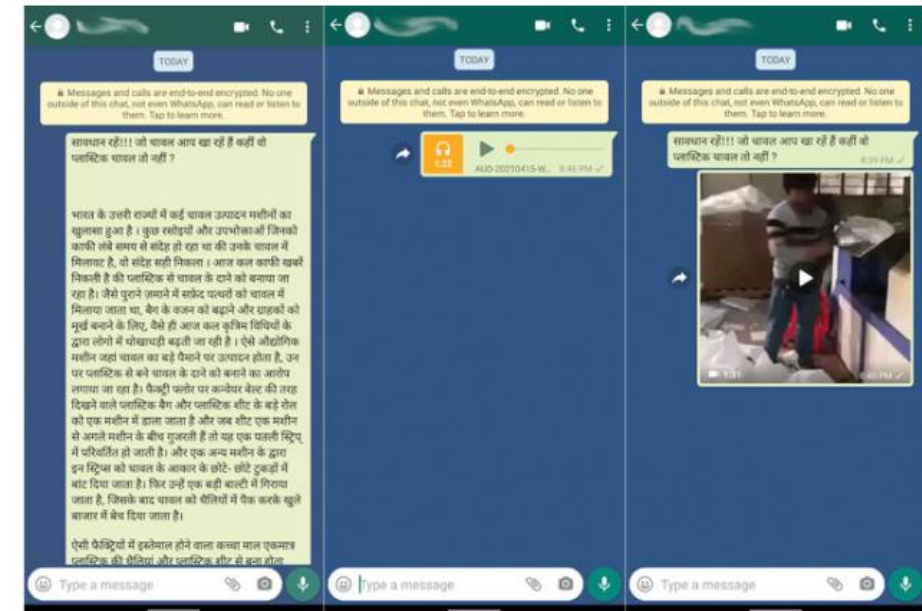
Why is outreach good? - Awareness

- Creating more public awareness and understanding of what scientists do, helps to decrease mistrust in science
- Digital critical illiteracy needs to be tackled
- It will also diminish the effect of fake news



Video sells

WhatsApp users looked at three versions of a story that falsely claimed that rice was being made out of plastic — in (left to right) text, audio or a video showing a man feeding plastic sheets into a machine.



Why is outreach good? - Awareness

- Through social media, fake news spreads really fast
- Debunking it on the news usually has little effect



EVERYTHINGNEWS DECEMBER 11, 2020 / 6:14 PM / UPDATED 6 MONTHS AGO

Fact check:
Queensland premier Annastacia Palaszczuk did not fake getting a flu shot

By Reuters Staff

5 MIN READ



- Digital critical literacy needs to be taught in schools. Universities can also teach these skills to the wider community in outreach initiatives



Why is outreach good? – Public support

- Support of the general public is essential because we owe it to the public → lots of science is funded by public taxes

Tabel 1 Uitgaven aan onderzoek en ontwikkeling (O&O)

Land	Jaar	O&O-uitgaven (%bbp)	Privaat	Publiek	Buitenland	Overig
België	2011	2,2	1,3 (60%)	0,5 (23%)	0,3 (13%)	0,1 (3%)
Denemarken	2012	3,0	1,8 (60%)	0,9 (29%)	0,2 (7%)	0,1 (4%)
Duitsland	2011	2,9	1,9 (66%)	0,9 (30%)	0,1 (4%)	0,0 (0%)
Nederland	2011	2,0	1,0 (50%)	0,7 (36%)	0,2 (11%)	0,1 (4%)
Zwitserland	2008	2,9	2,0 (68%)	0,7 (23%)	0,2 (6%)	0,1 (3%)
Verenigd Koninkrijk	2012	1,7	0,8 (46%)	0,5 (29%)	0,3 (20%)	0,1 (6%)
Verenigde Staten	2012	2,8	1,6 (59%)	0,9 (31%)	0,1 (4%)	0,2 (6%)
EU 15	2011	2,1	1,2 (55%)	0,7 (33%)	0,2 (9%)	0,0 (3%)

Bron: OESO. O&O-uitgaven zijn gedefinieerd als de 'gross domestic expenditures on R&D' (GERD). Deze omvatten middelen voor fundamenteel onderzoek, toegepast onderzoek en experimentele ontwikkeling en zijn uniform gedefinieerd over landen in de *Frascati Manual* van de OESO. Indirecte financiering door middel van belastingvrijstellingen zoals bijvoorbeeld de WBSO zijn geen onderdeel van GERD. De kolommen 'Privaat', 'Publiek', 'Buitenland' en 'Overig' bevatten de aldus gefinancierde O&O-uitgaven als percentage van het bbp. Tussen haakjes staan de aldus gefinancierde uitgaven als percentage van de totale O&O-uitgaven in dat land. Voor elk land wordt het meest recente beschikbare jaar weergegeven.

94% of public funds (e.g., NWO and ZonMw grants) go to public institutions and higher education



<https://www.cpb.nl/sites/default/files/publicaties/download/cpb-policy-brief-2015-07-publieke-onderzoeksfinanciering.pdf>

Why is outreach good? – Identify needs

- Public engagement helps researchers to more closely relate to societal issues and to questions people have
- It helps researchers to profit from input and ideas from outside academia and identify needs
- For example, input from patient organizations



- Come up with new ideas, make modifications based on input from patients, re-prioritize goals



Annual RegMed XB project meeting with patient representatives

<https://www.regmedxb.com/news-events/news/regmed-xb-2020-annual-meeting-extended>

Why is outreach good? – Education

- With outreach activities, gaps in knowledge can be (partially) filled (at both primary and secondary education levels)
- Schools don't always have the time, resources or knowledge to teach certain topics → they usually welcome these opportunities



Why is outreach good? – Career motivation

- Increase number of students choosing a career in science (or any other field)
- For example: Increase percentage of girls choosing exact sciences
- VHTO: During Girls' Day, technical companies, (non-)governmental organizations, and research institutes open their doors for 10-15 year old girls, in order to awaken/increase their interest in science, technology, engineering and mathematics (STEM)



<https://www.vhto.nl/activiteiten/girlsday/>

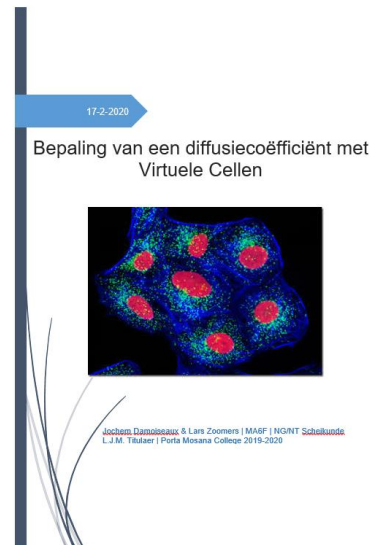
And another reason: It's fun and inspirational!

- Organizing outreach events is a great team building exercise
- Meet a lot of new people, young and old, with different backgrounds
- Participating in outreach activities can also be stimulating for scientists and enhance their creativity and motivation!



MERLN outreach examples

- Lectures at high schools
- Mini-internship for interested students (part of “profielwerkstuk”)



MERLN outreach examples

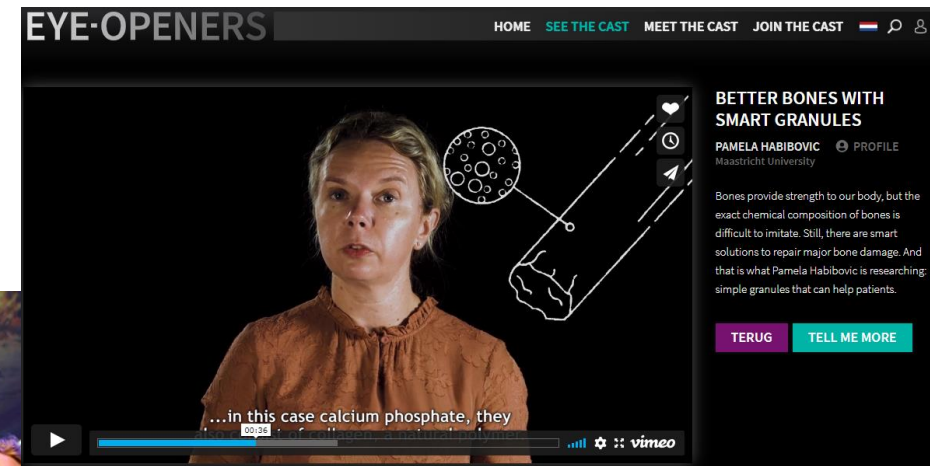
- Public lectures
- Great way to reach a large audience



Interview with Clemens van Blitterswijk on Pauw talkshow (artificial kidneys)



TEDx talk by Clemens van Blitterswijk



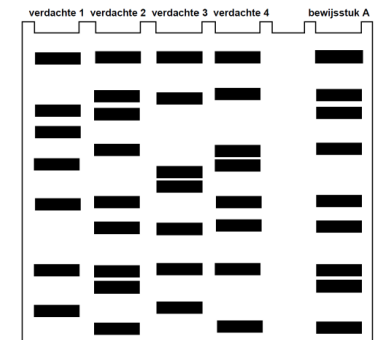
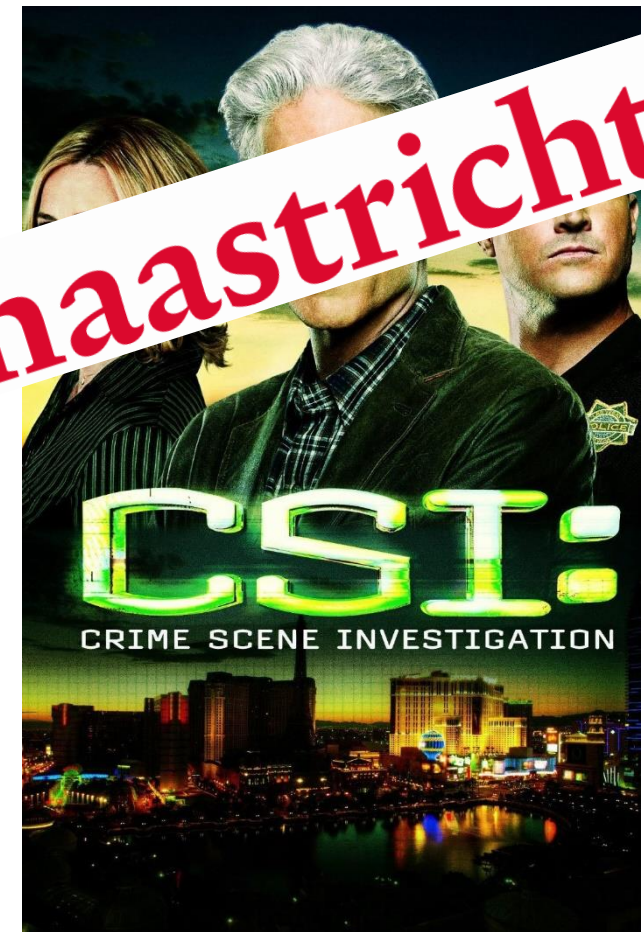
An Eye-Opener pitch and NewScientist Science Gala talk by Pamela Habibovic

MERLN outreach examples

- **Interactions with patient organizations**
- Stimulate patient-included research
- RegMed XB 2020 Annual Day: patient organisations from the Hartstichting (cardiovascular disease), Nierstichting (kidney disease), the Diabetes Fonds and Stichting DON (diabetes), and ReumaNederland (osteoarthritis) were invited to discuss how to communicate realistic expectations to patients and how to identify pertinent cases to study



- ## 2. DNA isoleren
- Voorbeeld van uit te voeren stappen tijdens DNA-isolatie**
- Het staal bestaat een groot aantal cellen met daarin DNA.
- Doe 1 liter water in de blender en doe hier 10 gram van het staal bij.
- In de blender worden de cellen kapot gemaakt, waardoor het DNA los in de oplossing komt.
- Doe 5 ml van de oplossing uit de blender in een buisje.
- Voeg twee zakjes zout toe. Dan flink hard schudden (met dop erop) totdat het zout helemaal opgelost is.
- Het DNA vindt het niet fijn in deze zoute oplossing.
- Giet voorzichtig 20 ml alcohol op de oplossing in het buisje. Alcohol is lichter dan het zoute water en blijft daarom op het water drijven. Omdat het DNA liever niet in het zoute water wil blijven 'zwemt' het DNA de alcohollaag in en wordt zichtbaar als witte sliertjes. Deze witte sliertjes kun je eruit 'vissen' met een haakje en in een kleiner buisje met wat water doen.




Does public outreach impede research performance?

- Some researchers are still reluctant to engage in public outreach activities
- Can be time consuming and researchers are under a lot of pressure already
- Engagement in public outreach is not adequately reflected in the metrics that are relevant for career advancement

Boost of 1 million euros for science communication thanks to new NWA call

18 May 2020

NWO has published a new call for proposals in the area of science communication as part of the Dutch Research Agenda (NWA). The call of 1 million euros must give science communication in the Netherlands a new boost with a broad range of projects.




Does public outreach impede research performance? Exploring the 'researcher's dilemma' in a sustainability research center

Omar Kassab 

Science and Public Policy, Volume 46, Issue 5, October 2019, Pages 710–720,

<https://doi.org/10.1093/scipol/scz024>

Published: 18 May 2019

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- The study comes to the conclusion that research performance is overall positively associated to engagement in public outreach activities. This insight has implications for the academic incentive and evaluation system.

Organizing outreach yourself

- Department/School/Faculty budget
- Contact your Marketing & Communications department
- Outreach grants:
 - KNAW Science Communication Fund
 - Biochemical Society Outreach Grant
 - Solvay Fund
 - NWO-NWA Science Communication Grant
 - ESCI Science Communication Grant
- Outreach doesn't have to cost much (aside from time expenditure). For example:
 - CSI: Maastricht → €500 per session
 - Mini-internships → €100-€200
- Put an enthusiastic team together



Questions?

