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## *How to effectively communicate & promote your research*

*AsiaEdit Author Success Webinar  
20 January 2022*



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Education Consultant*

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1 Types of non-academic writing

2 Promoting research to the public

3 Tips for plain-language writing

Research summaries

1 Types of non-academic writing

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## Which is the most readable?

A

Abstract

B

In Brief

C

Highlights / Key Points ✔

Pathway analyses are key methods to analyze 'omics experiments. Nevertheless, integrating data from different 'omics technologies and different species still requires considerable bioinformatics knowledge. Here we present the novel ReactomeGSA resource for comparative pathway analyses of multi-omics datasets. ReactomeGSA can be used through Reactome's existing web interface and the novel ReactomeGSA R Bioconductor package with explicit support for scRNA-seq data. Data from different species is automatically mapped to a common pathway space. Public data from ExpressionAtlas and Single Cell ExpressionAtlas can be directly integrated in the analysis. ReactomeGSA greatly reduces the technical barrier for multi-omics, cross-species, comparative pathway analyses. We used ReactomeGSA to characterize the role of B cells in anti-tumor immunity. We compared B cell rich and poor human cancer samples from five of the Cancer Genome Atlas (TCGA) transcriptomics and two of the Clinical Proteomic Tumor Analysis Consortium (CPTAC) proteomics studies. B cell-rich lung adenocarcinoma samples lacked the otherwise present activation through NFkappaB. This may be linked to the presence of a specific subset of tumor associated IgG+ plasma cells that lack NFkappaB activation in scRNA-seq data from human melanoma. This showcases how ReactomeGSA can derive novel biomedical insights by integrating large multi-omics datasets.

CC BY: Griss et al., 2020, Mol Cell Proteomics 19(12), 2115-2124; <https://doi.org/10.1074/mcp.TIR120.002155>

We present the novel ReactomeGSA resource for comparative pathway analyses of multi-omics datasets. ReactomeGSA is accessible through Reactome's web interface and the novel ReactomeGSA R Bioconductor package with explicit support for scRNA-seq data. We showcase ReactomeGSA's functionality by characterizing the role of B cells in anti-tumour immunity. Combining multi-omics data of five TCGA studies reveals marked opposing effects of B cells in different cancers. This showcases how ReactomeGSA can quickly derive novel biomedical insights by integrating large multi-omics datasets.

- ReactomeGSA is a novel tool for multi-species, multi-omics pathway analysis.
- Its quantitative pathway analysis methods offer high statistical power.
- Combining data of five TCGA studies shows B cells have opposing effects in cancers.
- ReactomeGSA reveals differences in key pathways between transcript- and protein-level.

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Author summaries

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<https://elifesciences.org/articles/25411>

Abstract  
(~250 wds)

Background

Method

Findings/  
Results

Conclusions/  
Interpretation

Trial Registration,  
Funding, Conflicts  
of Interest

Summary  
(~250 wds)

“Why was this study done?”

“What did the researchers do and find?”

“What do these findings mean?”

Significance Statement  
(120 wds)

Context

Aim

Approach

Brief finding

Main conclusion

IMRaD: Intro, Methods, Results + Discussion

→ Plain English abstract/summary, Plain language abstract/summary, Lay abstract/summary, Digest, Highlights

- Simpler, plain language; short sentences; maybe bullets
- Simplify, define, explain technical terms
- Prefer active voice
- Understandable by general undergraduate or highschooler?
- Useful for:
  - Attracting/helping readers
  - Funders, future collaborators
  - Research participants
  - Trial registries / general public

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Author lay summaries

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Based on CC BY: Kirkpatrick, E., Gaisford, W., Williams, E. et al. Res Involv Engagem 3, 17 (2017). <https://doi.org/10.1186/s40900-017-0064-0>

**There is a need for** the authors of research reports to be able to communicate their work clearly and effectively to readers who are not familiar with the research area. The National Institute for Health Research (NIHR), along with a number of other funding bodies and journals, require researchers to write short lay summaries... **In this study we looked at** how to improve the quality of plain English summaries (PESs). **We took** PESs which had been submitted to the NIHR Journals Library and asked authors to rewrite them using new guidance. **We also asked** an independent medical writer to edit the summaries. ... First, **we asked** a group of people who were not specialists in the subject area to read and rate how easy the summaries were to understand. Secondly, **we used** a well-known measure called the Flesch reading ease score to assess how easy the PESs were to read. **We found that** there was no difference in how easy people found the summaries to understand across the three versions. However, the PESs that were rewritten by the authors and that were edited by the independent medical writer were both easier to read than the originals. **This shows that** PESs can be improved and for organisations who feel that employing an independent writer to edit summaries is infeasible, providing clear, practical guidance to authors may be a cost-effective alternative.

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Graphical abstract

1 Types of non-academic writing

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[https://www.elsevier.com/\\_data/promis\\_misc/MCP-GA-Guidelines-Examples.pdf](https://www.elsevier.com/_data/promis_misc/MCP-GA-Guidelines-Examples.pdf)

- Use one diagram; preferably new figure
- Ensure clear “reading” direction, top-to-bottom or left-to-right
- Indicate context (eg. subcellular location, tissue/cell type, species)
- Emphasise new findings without excess details from previous literature
- Avoid speculation
- Exclude data; use simple labels
- Keep text to a minimum
- Highlight one process / one point
- Be free of distracting and cluttering elements
- Use colours effectively
- 996 x 996 pixels, 300 dpi, Arial, 12–16 pt; TIFF, EPS, PDF or MS Office file


**Journals may also ask for:** Audio slides, Video abstracts (+/- footage, interview, cartoon, music), Lay abstract/summary, 1 sentence/statement

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Research cycle

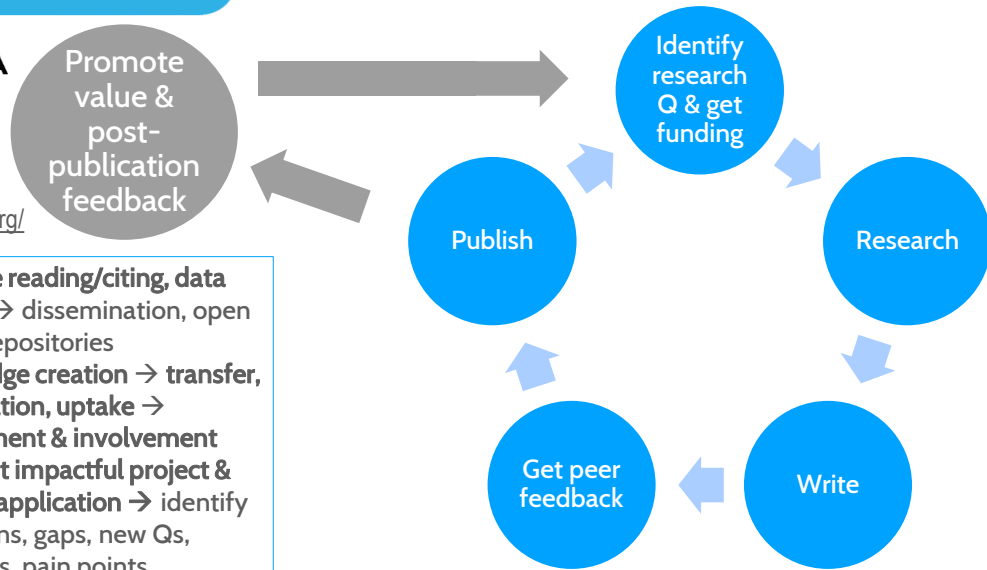
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**DORA**  
San Francisco Declaration on Research Assessment  
<https://sfdora.org/>

- Promote reading/citing, data sharing** → dissemination, open access repositories
- Knowledge creation** → transfer, mobilization, uptake → engagement & involvement
- Plan next impactful project & funding application** → identify limitations, gaps, new Qs, problems, pain points



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Research promotion

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### *Publication promotion & publicity*


1. **Academic outputs** → citations: journals, books (→researcher h score)
2. **Non-academic practical outputs:** eg, patents, textbooks, policies, practice guidelines
3. **Knowledge exchange:** non-academic stakeholder engagement (public education/understanding/debate, consulting, networking)
4. **Public attention:** social media mentions, news, blogs (→Altmetrics)
5. **Your promotion:** future funding, career progression, awards, prizes

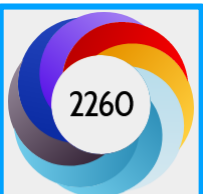
Adam, D.C., Wu, P., Wong, J.Y. et al

Clustering and superspreading potential of SARS-CoV-2 infections in Hong Kong

Nat Med 26, 1714–1719 (2020).

<https://doi.org/10.1038/s41591-020-1092-0>





**2260**

About this Attention Score

In the top 5% of all research outputs scored by Altmetric

Mentioned by

- 79 news outlets
- 14 blogs
- 1 policy source
- 2491 tweeters
- 6 Facebook pages
- 2 Wikipedia pages
- 3 Redditors

Citations

- 277 Dimensions

Readers on

- 341 Mendeley







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Increase visibility of articles

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**Voelcker Lab** @voelcker\_lab · Oct 17, 2018

Do you want to know more about porous silicon-based #nanomaterials for #therapy and #diagnosis?

\*\* Take a look at our latest review in *Advanced Therapeutics* @AdvSciNews - It's #OpenAccess!

bit.ly/2ymQ9wp

#theranostics #biomaging #therapeutics #bionano #nano

### Social engagement

1. Shares, reshares
2. Likes, comments
3. Links/mentions
4. Citations
5. Saves/downloads, Views

- Your or your university's account / webpage
- Highlights or Summary sentence: brief, non-technical but accurate
- Relevant image or graphical abstract
- Give reference; link to article (short URL)
- Link to Author's Accepted Manuscript, if allowed
- Use #, @, cross-post / comment
- Watch word count; if longer story, use Twitter threads (each 280 characters)
- Watch out:
  - © & CC licensing of text/image
  - Any conference / journal / media embargo
- Beware of:
  - Spreading misinformation & disinformation
  - Treating preprints / other reports like articles

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Mass communication

1 Types of non-academic writing

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1 Types of non-academic writing

2 Promoting research to the public

3 Tips for plain-language writing

**What is PR?**



**Press releases**  
(media, news releases)

Publishers/journals  
Universities

**Public relations**  
Press relations

University Research /  
External relations / Public  
affairs / Communications /  
Knowledge exchange office

**Personal relations**  
**Positive relationships**  
**Promoting research**  
Be proactive & reactive  
Be precise & relevant

News/interview, magazine,  
book, newsletter, brochure,  
research summary, blog,  
infographic, discussion  
paper, policy brief, social  
media, workshop, event,  
discussion, debate, poll

Roles of universities

2 Promoting research to the public

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### 3 University missions

**Triple helix**

- University
- Government
- Business/industry

**Quadruple helix**

- Knowledge institutes
- Public sector
- Private sector
- Society/citizens (end users)

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Research impact

2 Promoting research to the public

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[https://www.ugc.edu.hk/eng/rgc/in\\_out.html](https://www.ugc.edu.hk/eng/rgc/in_out.html)

### What is impactful research?

**Impact:** Demonstrable contributions, beneficial effects, valuable changes or advantages that research qualitatively brings to the economy, society, culture, public policy/services, health, environment, or quality of life whether locally, regionally or internationally, and that are **beyond academia**.

Research Grants Council (RGC), HK University Grants Committee (UGC)

#### Stakeholder analysis

Better product, service, practice, policy, system, behaviour, skills...  
*(Impact type)*

Economy, law, culture, health, technology, social, environment...  
*(Impact area)*

**General public, government, non-profits, NGOs, charities, business...**  
*(Beneficiary sector)*

**Practitioners, leaders, service providers, clients, administrators, boards, communities, populations**  
*(Beneficiary reach)*

Small → Large effect,  
Short → Long term,  
Focused → Broad  
*(Extent)*

Local → International  
*(Scale)*

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Stakeholder engagement 1

2 Promoting research to the public

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### Stakeholder mapping

Research 1st users, collaborators, liaisons, sponsor

End users

Interest

Activity

Influence

Awareness/Attention →  
Interest →  
Decision/Desire →  
Action

AIDA

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Stakeholder engagement 2

2 Promoting research to the public

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### Stakeholder impact

**Lower engagement**

- Awareness-raising; keep informed
- Use general, indirect, briefer, less frequent methods
- Link to more detail

**High engagement**

- **Keep engaged:** contact directly & frequently, monitor closely
- **Communication plan:**
  - Suitable format/mode, type of publication & text/data/graphics
  - Messaging matches language, knowledge, technicality, context; awareness, attitudes, motivations, values, objections
  - Call to direct action

Interest/support

Influence

Activity

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**Impact campaigns** 2 Promoting research to the public asiocedit

[https://ies.ed.gov/ncee/edlabs/regions/appalachia/blogs/blog6\\_why-build-a-logic-model.asp](https://ies.ed.gov/ncee/edlabs/regions/appalachia/blogs/blog6_why-build-a-logic-model.asp)

### Logic model

**Problem Statement**  
 Inputs    Strategies    Short-Term Outcomes    Long-Term Outcomes    Impacts  
 (Strategies and Short-Term Outcomes are grouped as **Outputs**)  
**Assumptions**

Knowledge transfer / mobilisation pathway & risk management →  
 Impact evaluation →

*Audience, format, purpose, style, tone*

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**Promoting research** 2 Promoting research to the public asiocedit

### Communicating your research

**More important**

Conclusion

**Less important**

Agenda of talk

**Important**

Context, Methods & Results/Figures

Conclusions/ Interpretation & Implications

**Most important**

Capture & Connect

Interest & Immerse

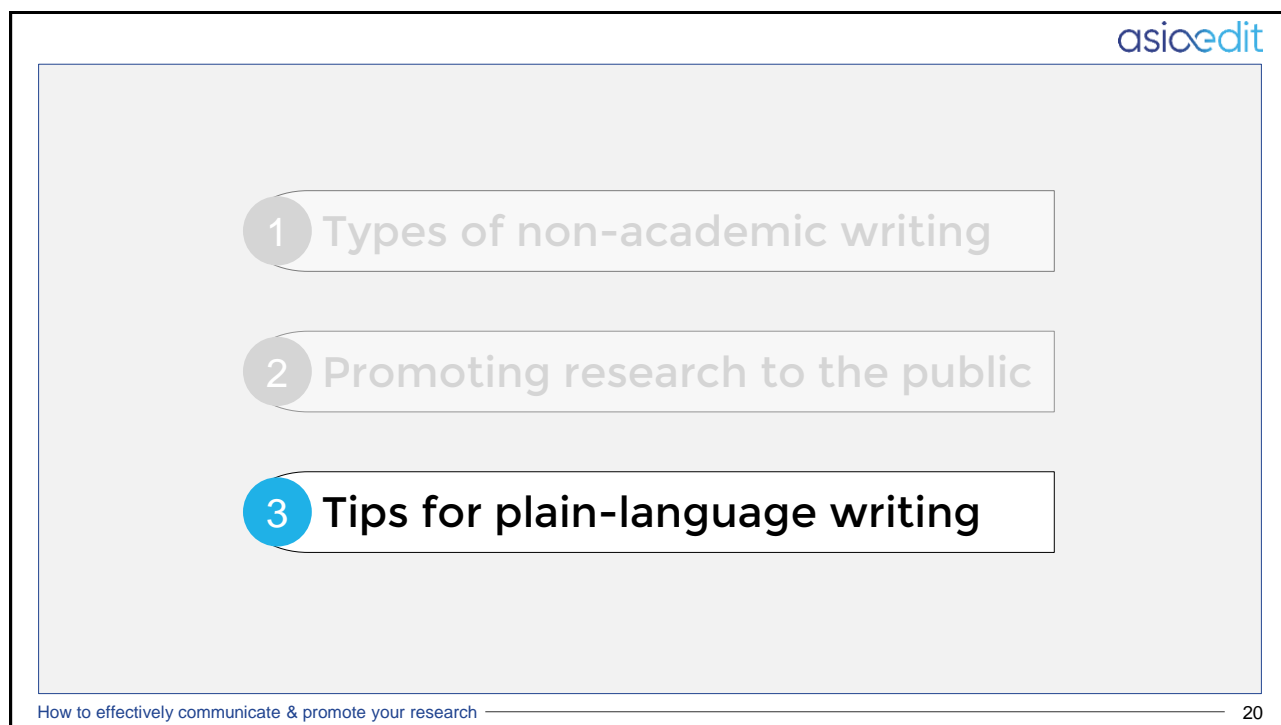
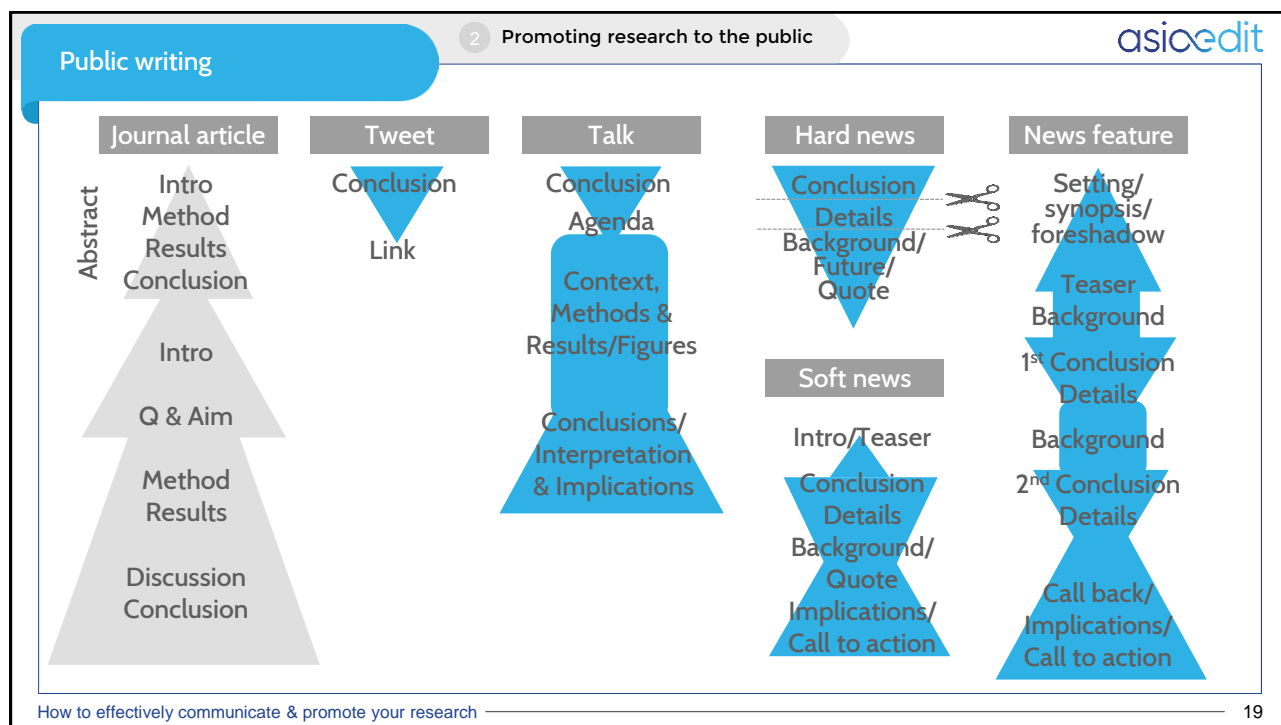
**P**roximity  
**I**mpact  
**T**imeliness  
**C**onflict  
**H**uman interest

**Climax**

**Exposition**  
Orientation & complication

**Resolution**  
Conclusion & coda

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Non-academic writing

3 Tips for plain-language writing

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<https://www.bbc.com/news/health-5996331>  
<https://www.nature.com/articles/411591-021-01637-7>

## Which is a news story?

**A Space travel destroys red blood cells faster than on Earth**

Canadian researchers say 50% more red blood cells are destroyed in space and this continues for however long the mission lasts.

**As a result, long voyages to the Moon, Mars and beyond may be a challenge, they say.**

... "Space anaemia" is something scientists have known about since the very first missions returned to Earth — but exactly why it happens has been a mystery.

Now a small University of Ottawa study of 14 astronauts — including Britain's Tim Peake — on six-month stays at the International Space Station, has found out more....

**B Hemolysis contributes to anemia during long-duration space flight**

Anemia in astronauts has been noted since the first space missions, but the mechanisms contributing to anemia in space flight have remained unclear. Here, we show that space flight is associated with persistently increased levels of products of hemoglobin degradation... in 14 astronauts throughout their 6-month missions onboard the International Space Station. One year after landing, erythrocytic effects persisted.... These findings suggest that the destruction of red blood cells, termed hemolysis, is a primary effect of microgravity in space flight and support the hypothesis that the anemia associated with space flight is a hemolytic condition that should be considered in the screening and monitoring of both astronauts and space tourists.

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News genre 1

3 Tips for plain-language writing

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<https://www.bbc.com/news/health-5996331>

## Features of news

**Space travel destroys red blood cells faster than on Earth**

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As a result, long voyages to the Moon, Mars and beyond may be a challenge, they say.

"Space anaemia" is something scientists have known about since the very first missions returned to Earth — but exactly why it happens has been a mystery.

Now a small University of Ottawa study of 14 astronauts — including Britain's Tim Peake — on six-month stays at the International Space Station, has found out more....

- Short headline: attention, interest
- FFF: findings & facts first**  
At least 3 WH:  
who, where, what, when,...
- Short paragraphs (often 1 sentence)
- Short sentences, short familiar words
- Quotes from key people:  
opinions, main implications, definitions
- Explanations of technical/new terms
- Significance/motivation:  
background, gaps, novelty, why
- Relatable (timely, relevant)
- Teaser... full story later to explain/expand on key news, most important first; name source

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News genre 2

3 Tips for plain-language writing

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<https://www.bbc.com/news/health-5996331>  
<https://www.nature.com/articles/41581-021-01637-7>

## Ending a story

A

### Space travel destroys red blood cells faster than on Earth

...

...

The findings, **published in Nature Medicine**, may mean people who take part in space missions to far-off planets would need to adapt their diets to make more iron, as well as eat more calories for energy.

Screening astronauts and space tourists for blood or health conditions affected by anaemia before spaceflight might also be necessary, the researchers say.

B

### Hemolysis contributes to anemia during long-duration space flight

...

...

RBC regulation demonstrated major disruptions in space compared to on Earth. **Increased hemolysis by 54% was a primary effect of exposure to space in astronauts** that persisted throughout their long-duration missions and may constitute the leading mechanism of space-related anemia. Space hemolysis should be considered in the screening, monitoring and follow-up of astronauts launching on space exploration missions, as well as space tourists.

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Style & tone

3 Tips for plain-language writing

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<https://www.bbc.com/news/health-5996331>  
<https://www.nature.com/articles/41581-021-01637-7>

Formal	Anemia in astronauts has been noted since the first space missions
Impersonal?	These results suggest that Here, we show that
Technical	erythrocyte destruction
Distant	implies a compensatory increased RBC production
Abstract	nutritional countermeasures
Complex	One year after landing, erythrocytic effects persisted, including increased levels of hemolysis, reticulocytosis and hemoglobin

Informal	"Space anaemia" is something scientists have known about since the very first missions
Personal	Scientists have found ...his team will research how
Non-technical	red blood cell loss
Relatable	Fortunately, the body can compensate... would become very ill
Concrete	eat more calories for energy
Simple	A year later they were still losing red blood cells at a higher rate

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Being relatable

3 Tips for plain-language writing

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<https://thednaexchange.com/tag/total-number-of-cells-in-the-human-body/>  
<https://www.sciencefocus.com/the-human-body/how-long-is-your-dna/>

### Use familiar concepts

Of humans'  $3 \times 10^{13}$  cells, 10% contain DNA of  $3 \times 10^6$  base pairs

If you stretched out and joined up the DNA from all the cells in your body, it would span our Solar System twice

...like an Olympic swimming pool

...has the same density as water

...equivalent of a person lifting 10 horses

...can fill a tennis court in a week

...5 times the size of a bus

...you could fit 100 on the tip of a sewing needle

...sing Happy Birthday twice

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Help your audience

3 Tips for plain-language writing

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<https://www.bbc.com/news/health-5596331>  
<https://www.nature.com/articles/641581-021-01637-7>

### Explanations & definitions

Glossary

<b>Erythrocyte</b>	Red blood cell
<b>Hemoglobin</b>	Oxygen-transporting protein in red blood cells
<b>Hemolysis</b>	Breakdown of red blood cells

Using blood and breath samples taken during their missions, the researchers were able to measure red blood cell loss. **These cells** carry oxygen from the lungs to all parts of the body — and are the **key to life**.

The destruction of red blood cells, **called hemolysis**, contributes to anemia in astronauts.

The destruction of red blood cells — **called hemolysis** — contributes to anemia in astronauts.

The destruction of red blood cells (**called hemolysis**) contributes to anemia in astronauts. / The destruction of red blood cells (**hemolysis**)...

Extra sentence

Parentetical




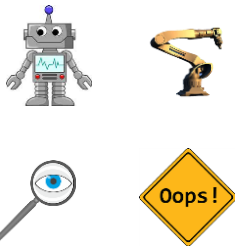


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Mind your audience

3 Tips for plain-language writing

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## Ambiguous terms

<div style="background-color: #A9A9A9; padding: 5px; margin-bottom: 5px;">Organic</div> 	<div style="background-color: #A9A9A9; padding: 5px; margin-bottom: 5px;">Aerosol</div> 
<div style="background-color: #A9A9A9; padding: 5px; margin-bottom: 5px;">Chemical</div> 	<div style="background-color: #A9A9A9; padding: 5px; margin-bottom: 5px;">Robot</div> 
<div style="background-color: #A9A9A9; padding: 5px; margin-bottom: 5px;">Stress</div> 	<div style="background-color: #A9A9A9; padding: 5px; margin-bottom: 5px;">Oversight</div> 

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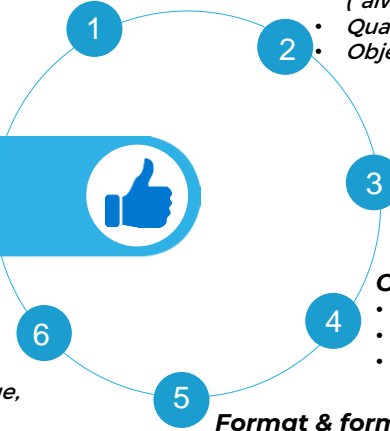
General tips

3 Tips for plain-language writing

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**Research & ethics:**

- Peer-reviewed evidence, data visualisation
- Authority & accuracy of quotes
- No plagiarism; no bias; declare conflicts of interest



**Truthfulness:**

- No exaggeration, sensationalism ("miracle"), over-generalisation / over-simplification ("always")
- Quantify ("lots of", "massive")
- Objectivity versus subjective opinion

**Precision:**

- Round up/down numbers?
- Absolute or relative change or risk?
- Causation versus correlation? Statistical versus real-world significance?

**Comprehension:**

- Expected content, structure, language
- Clarity, familiar words; explain jargon
- Test text with non-specialists (inc. abbreviations, idioms, analogies)

**Engagement:**

- Frontload newsworthy point, story telling, human angle, call to action
- Use inclusive/unbiased language, active voice
- Involve the reader ("Here's the thing", "What does this mean?" "Why is this important for us?")

**Format & formality:**

- 1 idea per short & simple paragraph, lists, headings
- Pronouns (you, we, us); contractions (it's / it is)?
- Colloquialisms ("sick", "cool", "lit", "blown away")?

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*Thank you!*

