ESAP CONFERENCE 2017
ENGLISH FOR SPECIFIC ACADEMIC PURPOSES
Bochum, Saturday 13 May

A research scientist's view of scientific writing

Tim Skern
Medical University of Vienna
University of Vienna

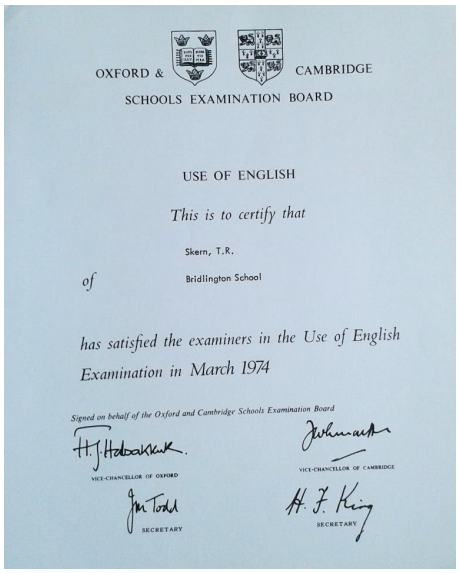
Recent peer review of manuscript

Reviewer 2: The manuscript by Leite, Bergthaler and Skern entitled "Vaccinia virus G1 protein: absence of autocatalytic self-processing" explores G1 cleavage function in bacteria, rabbit reticulocyte lysates and HeLa cells.

The English language is: **insufficient**

Manuscript accepted this week without any language changes

Any training?



OXFORD & CAMBRIDGE
SCHOOLS EXAMINATION BOARD

USE OF ENGLISH

This is to certify that

Skern, T.R.

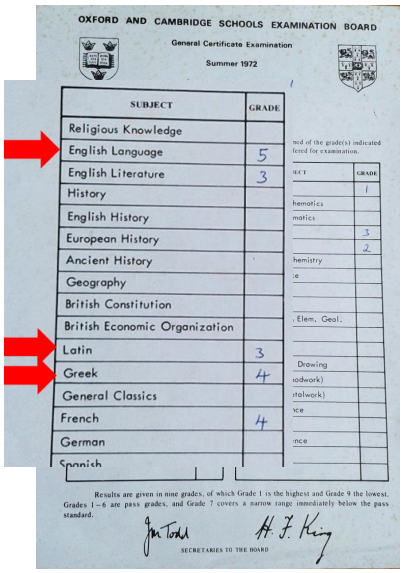
of Bridlington School

has satisfied the examiners in the Use of English Examination in March 1974

Signed on behalf of the Oxford and Cambridge Schools Examination Board

VICE-CHANCELLOR OF OXFORD — VICE-CHANCELLOR OF CAMBRIDGE

SECRETARY — SECRETARY



OXFORD AND CAMBRIDGE SCHOOLS EXAMINATION BOARD

General Certificate Examination

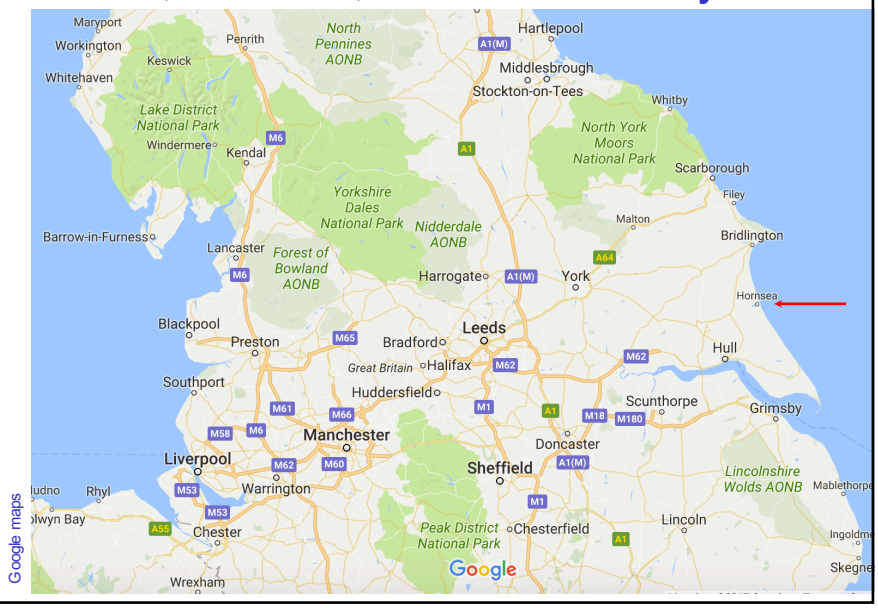
Summer 1972

SUBJECT	GRADE
Religious Knowledge	
English Language	5
English Literature	3
History	
English History	
European History	
Ancient History	
Geography	
British Constitution	
British Economic Organization	
Latin	3
Greek	4
General Classics	
French	4
German	
Spanish	

Results are given in nine grades, of which Grade 1 is the highest and Grade 9 the lowest. Grades 1–6 are pass grades, and Grade 7 covers a narrow range immediately below the pass standard.

SECRETARIES TO THE BOARD

A small, isolated, rural community….



I will do my best!

Keynote speakers must try harder
Nature 542, p165

Overview

- What inspired you to write your book?
- How did you identify your students' English writing deficits?
- As a science researcher and professor, what advice can you give the ESP 'practitioner' for teaching academic and scientific writing?
- What future developments and demands do you foresee in the teaching of academic and scientific writing?

Overview

- What inspired you to start your course?
- How did you identify your students' English writing deficits?
- As a science researcher and professor, what advice can you give the ESP 'practitioner' for teaching academic and scientific writing?
- What future developments and demands do you foresee in the teaching of academic and scientific writing?

1977 BSc in Biochemistry

T. Skern

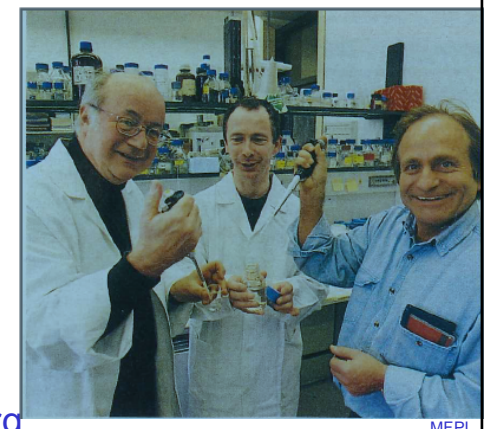
Fifteen years later

Tuesday, 6th October, 1992, 18.00

Writing and Speaking Scientific English

How did it happen?

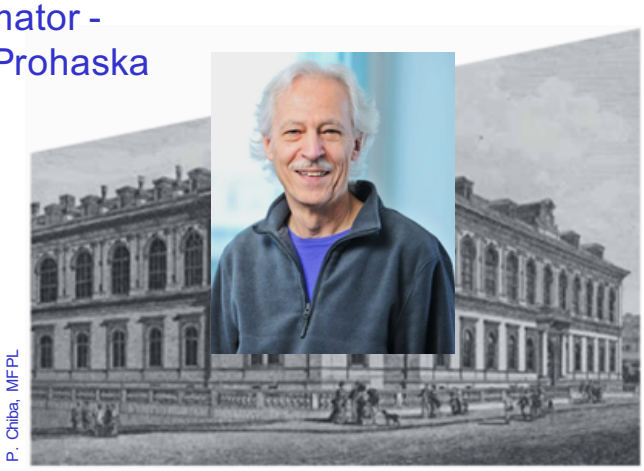
- PhD 1981
- 17.5.1982 Vienna
- My mentor – **Ernst Küchler**
- Writing manuscripts
- Correcting manuscripts in Vienna and Strasbourg



MFPL

“Kaiser” Institute

- My animator - Rainer Prohaska



P. Chiba, MFPL

Even practicals have their uses!

Writing and speaking scientific English

- Course at the faculty of chemistry, University of Vienna
- 14 weeks, 2 academic hours weekly
- Recommended but not mandatory
- Voluntary for the lecturer
- No qualifications required

Speaking scientific English:

Practise
=
Make mistakes!!!

Sir Peter Medawar, Scientist, Writer and Nobel Laureate
in “Advice to a Young Scientist” (1979)

An English Standard?

Structure of 2A proteinase.

Proteinase 2A is a 17kDa protein (König and Rosenwirth 1988) coded by certain picorna virus.

Analysis of the various 2A amino acid sequences code for by the different strains of the viruses which produce 2A proteinase. This resulted in a common consensus sequence being identified around the active cys residue for 2A,3C and certain serine protease's. However the nucleophilic residue -ser of serine protease's has been replaced by -cys in 2A and 3C.

Proteinase 3C is suggested to be a cystine proteinase by inhibition by iodoacetate and N-ethylmaleimide which implies the presence of a thiol group within its active site (Hämmerle *et al* 1991). Iodoacetamide is also demonstrated to inhibit 2A proteinases trans cleavage of VP1-2A (Molla *et al* 1993 ; König and Rosenwirth 1988). N-ethylmaleimide is also demonstrated to inhibit 2A functionally (tested by trans labelled peptide) by König and Rosenwirth. This suggested that like 3C , 2A is a sulfhydryl proteinase.

Writing exercises

Summaries of general articles and book reviews from Nature or Science magazine

Commentaries

Opinions

Freud and cocaine

Giants on Coke
Nature, 476, 397 (2011)

Voltaire

Discuss whether you think the following statement to still be as true as when Voltaire wrote it:

"Doctors pour drugs of which they know little, to cure diseases of which they know less, into human beings of whom they know nothing"

Identifying students' deficiencies

- Commonality of deficiencies
- Led to evolution of recommendations
- Confidence for students
- Less work for me
- Now formalised for correction of written work

35 formalised corrections

1. Words that fool my spellchecker. (p17)
2. Not a complete sentence. Always write complete sentences. (p19)
3. Comma guideline 1 (p20).
4. Comma guideline 2 (p20).
5. Comma guideline 3 (p20).
6. Comma guideline 4 (p21).
7. Do not use the colon like this. (p21)
8. Why did you set commas here? (p20-21)
9. Avoid the dash, use brackets instead. (p23)
10. Avoid using abbreviations as part of the sentence. (p23)
11. Do not start sentences with "and", "but, "because" and "so". Use better joining words. (p24).
12. Do not end sentences with "too", "also", "though" or "yet (p24).
13. Avoid "get". (p25).
14. Avoid "a lot", "lots", "a bit" and other such diffuse expressions. (p25).
15. Find alternative word (e.g. for big). (p30-p31).
16. PARAGRAPHS (p37)
17. Why is there a paragraph break here? (p37)
18. Sentence is too complex. (p37)
19. Keep it simple. (p37)
20. Omit needless words. (p41)
21. Be more careful in reading your work. (p42)
22. Proband is not used in this way in English. (p67)
23. Nothing can be proven experimentally. (p71)
24. This is not a word in the English language.
25. What do you mean?
26. Is this what you mean?
27. German grammar
28. Indent your paragraphs (p36).
29. Always write these forms out (p23).
30. Place adverb close to the verb.
31. Make sentence more direct; see how much more powerful it is (p37).
32. What does the pronoun (e.g. it) refer to?
33. Avoid "create". Use generate, make, produce instead.
34. What does "it" refer to?
35. No capitals for chemicals.

Words that fool my spellchecker…

- Dear Prof. Skern,

  I am writing in regard to the presentations given in the curse „Writing and Speaking Scientific English"

35 formalised corrections

1. Words that fool my spellchecker. (p17)
2. Not a complete sentence. Always write complete sentences. (p19)
3. Comma guideline 1 (p20).
4. Comma guideline 2 (p20).
5. Comma guideline 3 (p20).
6. Comma guideline 4 (p21).
7. Do not use the colon like this. (p21)
8. Why did you set commas here? (p20-21)
9. Avoid the dash, use brackets instead. (p23)
10. Avoid using abbreviations as part of the sentence. (p23)
11. Do not start sentences with "and", "but, "because" and "so". Use better joining words. (p24).
12. Do not end sentences with "too", "also", "though" or "yet (p24).
13. Avoid "get". (p25).
14. Avoid "a lot", "lots", "a bit" and other such diffuse expressions. (p25).
15. Find alternative word (e.g. for big). (p30-p31).
16. PARAGRAPHS (p37)
17. Why is there a paragraph break here? (p37)
18. Sentence is too complex. (p37)
19. Keep it simple. (p37)
20. Omit needless words. (p41)
21. Be more careful in reading your work. (p42)
22. Proband is not used in this way in English. (p67)
23. Nothing can be proven experimentally. (p71)
24. This is not a word in the English language.
25. What do you mean?
26. Is this what you mean?
27. German grammar
28. Indent your paragraphs (p36).
29. Always write these forms out (p23).
30. Place adverb close to the verb.
31. Make sentence more direct; see how much more powerful it is (p37).
32. What does the pronoun (e.g. it) refer to?
33. Avoid "create". Use generate, make, produce instead.
34. What does "it" refer to?
35. No capitals for chemicals.

Formalised corrections in action

Abstract: Food allergy and its molecular background

The food allergy is a worldwide spread health problem in the 21 Century, although it is not the same reaction as the food intolerance, that affect almost the half of the population. It is an adverse, immune mediated response to certain food proteins, which can cause several symptoms on the skin, in the respiratory and gastrointestinal tract or even in the cardiovascular system. There are some features, what can be found at most of the allergens, however none of them are the main and only occasion of a formation an allergic reaction.

Encouraging students to be critical

- Support the intellectual development from school pupil to university student

Quote from the late Gottfried (Jeff) Schatz (biochemist, writer, philosopher):

> "I told my post-docs to do an experiment. They went away and did the opposite. That's how I learned something."

Science is incorrigibly revolutionary

Universities:
Guardians of our future

12th March 2015

Search terms : lecture by gottfried schatz uni wien
Suchbegriffe: gottfried schatz uni wien

Redacting with Mr. Darwin

www.sciencemag.org SCIENCE VOL 326 6 NOVEMBER 2009 801

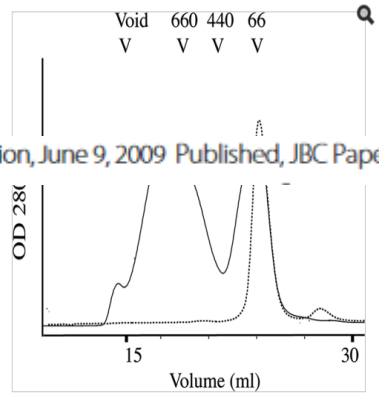
How to practise manuscripts?

- Use negative examples to see how manuscripts can be improved

An invalidating error

PMC full text: J Biol Chem. 2009 Aug 14; 284(33): 22012–22021.
Published online 2009 Jun 11. doi: 10.1074/jbc.M109.031807
Copyright/License ► Request permission to reuse

FIGURE 5.



Received for publication, June 9, 2009 Published, JBC Papers in Press, June 11, 2009, I

Effect of N-terminal deletions on 2C oligomerization. Gel filtration chromatograms of Δ19 MBP-2C (*solid line*) and Δ38 MBP-2C (*dotted line*) proteins.

Wool-pulling at its worst (or best?)

TABLE 1. Optimal amounts of plasmid DNA required for the transcription and replication of an artificial Ebola virus minigenome[a]

Amt of Plasmid DNA (μg) expressing:						Relative efficiency of GFP expression[b]
L	NP	VP35	VP30	T7 Pol	GFP-vRNA	
1.0	0.5	0.5	1.0	1.0	1.0	1.0
1.0	0.5	0.5	0.3	1.0	1.0	2.5
1.0	0.5	0.5	0.1	1.0	1.0	3.2
2.0	0.5	0.5	1.0	1.0	1.0	1.5
2.0	0.5	0.5	0.3	1.0	1.0	7.5
2.0	0.5	0.5	0.1	1.0	1.0	3.7
3.0	0.5	0.5	1.0	1.0	1.0	2.9
3.0	0.5	0.5	0.3	1.0	1.0	[illegible]
3.0	0.5	0.5	0.1	1.0	1.0	7.2
4.0	0.5	0.5	1.0	1.0	1.0	0.0
4.0	0.5	0.5	0.3	1.0	1.0	13.9
4.0	0.5	0.5	0.1	1.0	1.0	[illegible]

[a] 293T cells were transfected with plasmids for the expression of the Ebola virus Zaire L, NP, VP35, and VP30 proteins and with p3E5E6GFP and pC-T7Pol. Forty-eight hours later, the number of GFP-expressing cells was determined with a fluorescence microscope.
[b] Determined by counting the number of GFP-expressing cells in five microscopic fields. The sample containing 1 μg of plasmids expressing L, VP30, p3E5E6GFP, and pC-T7Pol and 0.5 μg of plasmids expressing NP and VP35 was chosen as the reference (value of 1); approximately 500 GFP-expressing cells were observed with these amounts of plasmid DNA.

TABLE 2. Optimal amounts of plasmid DNA required for the production of infectious VLPs[a]

Amt of Plasmid DNA (μg) expressing:									Relative efficiency of VLP formation[b]
L	NP	VP35	VP30	GP	VP40	VP24	T7 Pol	GFP-vRNA	
4.0	0.5	0.5	0.3	1.0	1.0	1.0	1.0	1.0	1.0
4.0	0.5	0.5	0.3	1.0	1.0	0.3	1.0	1.0	1.3
4.0	0.5	0.5	0.3	1.0	1.0	0.1	1.0	1.0	1.2
4.0	0.5	0.5	0.3	1.0	1.0	0.03	1.0	1.0	1.6
4.0	0.5	0.5	0.3	1.0	1.0	0	1.0	1.0	1.2
4.0	0.5	0.5	0.3	1.0	0	0.03	1.0	1.0	0
4.0	0.5	0.5	0.3	0	1.0	0.03	1.0	1.0	0

[a] 293T cells were transfected with plasmids for the expression of seven Ebola Zaire virus structural proteins and with p3E5E6GFP and pC-T7Pol. Seventy-two hours later, the supernatants containing Ebola VLPs were harvested and incubated with fresh 293T cells transfected with plasmids expressing L, NP, VP35, and VP30 proteins. Seventy-two hours after infection, the number of GFP-expressing cells (corresponding to the number of infectious VLPs) was determined with a fluorescence microscope.
[b] Determined by counting the number of GFP-expressing cells in all microscopic fields. The sample containing 4.0 μg of plasmid expressing L, 0.5 μg of plasmids expressing NP and VP35, 0.3 μg of plasmid expressing VP30, and 1 μg of plasmids expressing GP, VP40, VP24, p3E5E6GFP, and pC-T7Pol (which produced ~600 infectious VLPs/ml of supernatant) was chosen as the reference (value of 1).

JOURNAL OF VIROLOGY, Jan. 2004, p. 999–1005
0022-538X/04/$08.00+0 DOI: 10.1128/JVI.78.2.999–1005.2004

Do not swallow
everything
you read, even
in a high-impact
journal!

Nature, 444, 566 (2006)

How to find “one size fits all” subjects?

- Topics that all students could write about – “Gedankenexperimente”
- Inspired by Science’s fiction:

Nature, 413, 573 (2001)

- Most popular topic: Can ants forecast the weather?
- Emphasise the advance in knowledge

Why do we write scientific manuscripts?

From a natural scientist's viewpoint:

To describe and present

an advance in knowledge

90% happen to be in English

Advance in knowledge

- Oral exercise in 4 sentences to formalise
- Main heading (disease)
- Subheading (specific aspect)
- Aim (Uncover cause of specific aspect)
- Result (First trends etc)

Advance in knowledge - example

- Psoriasis (disease)
- Psoriatic arthritis (specific aspect)
- Working with rheumatologists to find factors responsible (Aim)
- Nail psoriasis may be important (first trend)

Conjecture

- Generations of guidelines
- Formalised corrections
- Algorithm for writing the results section

Writing in the natural and medical sciences is analogous to the language of mathematics?

(with Brooke Morriswood, Univ Würzburg)

Challenges for the future present

- Plagiarism
- Evolution of language and scientific reporting

  (e.g. Quantifying the evolutionary dynamics of language. Lieberman et al., Nature. 449 713-6 (2007))

Nature puts it another way

Nature 539, 140 (2016)

Jeff Schatz

Today's paper – PubMed is enough?

Nature. 2011 Mar 31;471(7340):602-7. doi: 10.1038/nature09886.

CRISPR RNA maturation by trans-encoded small RNA and host factor RNase III.

Deltcheva E[1], Chylinski K, Sharma CM, Gonzales K, Chao Y, Pirzada ZA, Eckert MR, Vogel J, Charpentier E.

Author information

Abstract

CRISPR/Cas systems constitute a widespread class of immunity systems that protect bacteria and archaea against phages and plasmid and commonly use repeat/spacer-derived short crRNAs to silence foreign nucleic acids in a sequence-specific manner. Although the maturation of crRNAs represents a key event in CRISPR activation, the responsible endoribonucleases (CasE, Cas6, Csy4) are missing many CRISPR/Cas subtypes. Here, differential RNA sequencing of the human pathogen Streptococcus pyogenes uncovered tracrRNA, trans-encoded small RNA with 24-nucleotide complementarity to the repeat regions of crRNA precursor transcripts. We show that tracrR directs the maturation of crRNAs by the activities of the widely conserved endogenous RNase III and the CRISPR-associated Csn1 prote all these components are essential to protect S. pyogenes against prophage-derived DNA. Our study reveals a novel pathway of small g RNA maturation and the first example of a host factor (RNase III) required for bacterial RNA-mediated immunity against invaders.

Comment in

Microbiology: Dicing defence in bacteria. [Nature. 2011]

PMID: 21455174 PMCID: PMC3070239 DOI: 10.1038/nature09886

[Indexed for MEDLINE] **Free PMC Article**

Challenges for the future

1. Personal challenges
2. Read it!
3. Connecting two cultures

Back to the future

When was this published?

Back to the future

50 & 100 Years Ago
Nature 491, 676 (29 November 2012)

Natural scientists and ESAP

- ESAP – never heard of it!
  - Ernst Bonek (teacher of scientific English TU Vienna)
- ESAP – What's that?
  - Tim Skern, September 2016
- ESAP – that's for the humanities, not for research scientists!
  - Renée Schroeder (Uni Wien, Wittgenstein Prize Awardee)
- We are unhappy with the courses taught by the English department and are considering teaching them ourselves.
  - Fardad Firooznia, (City College of New York, Biology)

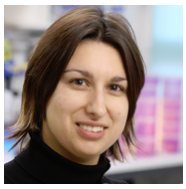
Grand challenge

- Bringing together ESAP teachers and researchers
- Exchanging and understanding each others' expectations

For natural scientists,
data builds the fabric of a manuscript,
the language the embroidery.

Acknowledgements

- Students of all my courses
- Colleagues everywhere for discussions, advice and suggestions
- Tanja Kostic (AIT)



AIT

Special thanks: Brooke Morriswood
https://totalinternalreflection.wordpress.com/

Skern group members 2016-2017

FWF Der Wissenschaftsfonds.

Thank you for your attention!