

Effective research posters

Jean-luc Doumont

Poster 27

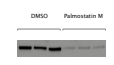
Thursday, 16:30 - 18:00
in the Expo (South side)

Deficiency of the serine hydrolase PREPL results in impaired regulated secretion

Karen Rosier, Luc Régal, and John Creemers
Human Genetics, KU Leuven (Belgium)

Congenital PREPL deficiency causes a rare metabolic disorder - growth hormone deficiency, feeding problems, hypotonia. We thus investigated how PREPL deficiency impacts secretion and hypothesize that PREPL has palmitoyl thioesterase activity.

Are you curious about what we found and how we designed our experiments? Come see our poster on Thursday at 16:30.




Karen Rosier
karen.rosier@kuleuven.be


KU Leuven
Human Genetics
Leuven, Belgium

Competition experiment with serine hydrolase inhibitor and FP-biotin

No inhibition



Inhibition



Child patient photo taken from
Jack Jaeken et al., John Creemers et al.
Dilation of PREPL, a gene encoding a putative serine oligopeptidase, in patients with hypotonia/cystinuria syndrome
The American Journal of Human Genetics 78, 38-51 (1996)

Baby patient photo and β -TCT3 cell data taken from
Luc Régal et al., John Creemers et al.
PREPL deficiency with or without cystinuria causes a novel myopathic syndrome
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Congenital PREPL deficiency causes a rare metabolic disorder - growth hormone deficiency, feeding problems, hypotonia.

PREPL is a homologue of prolyl endopeptidase - a serine protease which cleaves and hydrolyzes peptide bonds - is a cytoplasmic enzyme highly enriched in neurons. It has confirmed catalytic activity, but no identified substrate.

We investigated how PREPL deficiency impacts secretion

We hypothesize that PREPL has palmitoyl thioesterase activity, removing palmitate from cysteine in proteins involved in regulated secretion.



Stimling of PREPL impairs secretion in β -TCT3 cells

Condition	Secretion
Unstimulated secretion	PREPL ^{+/+} cells: 100% PREPL ^{-/-} cells: 100%
Basal secretion	PREPL ^{+/+} cells: 100% PREPL ^{-/-} cells: 100%

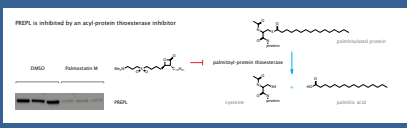
PREPL KO somatostrophs exhibit disturbed GH secretion

Condition	Secretion
Unstimulated basal/total	PREPL ^{+/+} cells: 100% PREPL ^{-/-} cells: 100%
Basal/total	PREPL ^{+/+} cells: 100% PREPL ^{-/-} cells: 100%

In contrast, PREPL KO somatostrophs do not differ in dense-core vesicles

Parameter	WT	KO
Size distribution (100000 cells)	147500	118000
LDCV count	100	100
Densin marker / LDCV	100	100

PREPL is inhibited by an acyl protein thioesterase inhibitor



Creating effective research posters

How not to create a poster
Frequently asked questions

Designing the poster
Formatting the poster
Using the back of the poster

Promoting the poster
Working efficiently

Conferences are all about networking, and poster sessions are excellent opportunities to do so. By presenting research in a concise, visual way and by fostering discussion about it, posters promote selective, efficient, meaningful interactions. In practice, however, posters are often seen as second-rate compared to presentations and thus receive too little effort. As a result, posters are unreadable, uninviting, overcrowded.

Above all, make your poster readable. Session participants will typically be standing 0.5 to 1.5 m away from the posters and should be able to read any text item from that distance. Equivalently, a standard A0 poster should remain readable when printed in A4 format and viewed like any printed page: that's a simple test—and a great way to produce a handout.

Besides readable, make your poster inviting for the audience. In terms of content, make the audience care about your work, then state your messages (express the *so what*, not the *what*) and develop them visually. In terms of format, and besides striving for illustrations rather than text to develop messages, give yourself lots of space and remove visual clutter (*noise*).

Less is more: to maximize what you get across, be selective in the content you include. True, an effective poster stands on its own: your poster should thus convey your messages even without any oral clarification, yet it need not answer all questions participants might have. Clarification questions (*What's the vertical axis in this graph?*) suggest a weak poster; in contrast, deepening questions (*That's interesting! And how did you measure it?*) confirm that the poster got participants to pay attention and to understand—a clear sign of success.

How **not** to create a poster

Do not design your poster like you design a paper, essentially as a chronological story of your research, with abstract, then introduction, methods, results, discussion, references, and even acknowledgments.



Do not format your poster like you pack a suitcase, trying to fit as much as possible within the allowance and squeezing in items wherever there is space left instead of placing them where it would make sense.

What about the (awful) template I'm supposed to use?

Templates are primarily meant to promote a brand by allowing a consistent visual appearance across a collection of related documents, including posters. Sadly, this aim is too often pursued by means of senseless originality, at the expense of readability, visual clarity, and overall effective communication—all aspects that would do more for an organization (especially a research one) than mindless branding.

Your loyalty to your organization is first to create an outstanding poster and only then to make sure that every viewer of it knows which organization produced this outstanding poster. In other words, do not let a template stand in the way of greatness. Do strive nonetheless to make your effective poster visually consistent with related documents: display the logo prominently, use the organization's font if any, work with organizational colors if possible.

My poster's finally ready. Now how do I present it?

How to present a poster effectively at a conference is a whole other topic. Here are just three quick tips. First, prepare “pick-up lines” you can use to attract passersby, while you make eye contact with them (*Hello. Are you interested in regulated secretion?*). Next, be ready to tell your story in just two minutes, extending it to five minutes if people show interest; base further discussion on the questions they ask. Finally, as you chat with possibly just one person, keep an eye for other people who seem interested; include them in the conversation as best you can.

Designing the poster

Announce the *what*—the poster's main message, such as here, or just the poster's topic: left-aligned, on maximum two lines, with a meaningful line break.

Announce the *who* in a way that invites interaction with the person(s) presenting the poster: include the first names, consider displaying a photograph.

Make the audience care: provide (minimal) context if useful, then express the *need*—the research gap between *what we have* already and *what we want*.

Put yourself in the picture: now, state what you did in an effort to address the need—a single sentence with a research verb in the first person, past tense.

State and develop your messages at all levels. State your conclusion upfront, right after what you did. Focus the poster on convincing your audience of it.

State each message verbally as a complete sentence (subject, conjugated verb). Again, set it left-aligned, on maximum two lines, with a meaningful line break.

Develop the message visually (picture, graph, etc.), with a high signal/noise ratio: show (all) the data, provide meaningful values, eliminate unneeded ink.

Deficiency of the serine hydrolase PREPL results in impaired regulated secretion

Karen Rosier, Luc Régal, and John Creemers

KU LEUVEN

Congenital PREPL deficiency causes a rare metabolic disorder

PREPL is a homologue of propyl endopeptidase
a serine peptidase which cleaves small peptides (less than 3 kDa)
is a cytoplasmic enzyme highly expressed in brain less so in heart, kidney, skeletal muscle
has confirmed catalytic activity, but no identified substrate

growth-hormone deficiency
feeding problems
hypotonia



Patient at 6 months Child patient

We investigated how PREPL deficiency impairs secretion

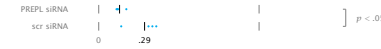
We hypothesize that PREPL has palmitoyl thioesterase activity, removing palmitate from cysteine in proteins involved in regulated secretion

Silencing of PREPL impairs secretion in β -TC3 cells

Stimulated secretion



Basal secretion

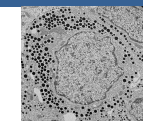


PREPL KO somatotrophs exhibit disturbed GH secretion

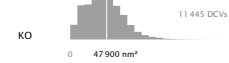
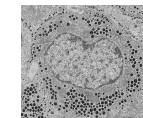
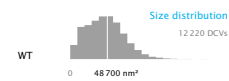
(stimulated - basal)/total



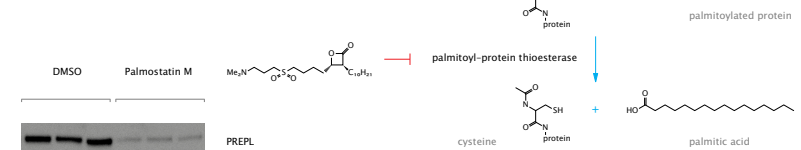
basal/total



In contrast, PREPL KO somatotrophs do not differ in dense-core vesicles



PREPL is inhibited by an acyl-protein thioesterase inhibitor



Formatting the poster

Use the layout to reveal the structure of your poster, not to make it pretty. By default, use white boxes against a color background: one box to announce the *what* and the *who*; one or perhaps two to make the audience care, put yourself in the picture, and state (and possibly also illustrate) your conclusion; and one to state and develop each of your messages.

Achieve clarity through space—lots of it. Surround each text item with sufficient space; in particular, foresee generous margins within boxes, including the top box presenting the poster title and authors. Distribute space, but resist the temptation to fill it.

Work on the relative positions of individual items before you work on the appearance of these items. Use proximity to convey related content. Think big: page layout is about how the *page* looks as a whole.

Achieve harmony through constraints: a single font in just a few sizes, such as *small*, *normal*, and *large* (not counting extra sizes for the title and authors); a limited set of meaningful colors (perhaps just one besides black); a few alignment axes. Be consistent: display in a similar way items that play a similar role. Use size (with enough space) to convey importance.

Use other devices sparingly: reserve bold (if any) for words that make sense when read on their own. Use italics or possibly color for any local emphasis. Do not underline words or set them in all capitals.

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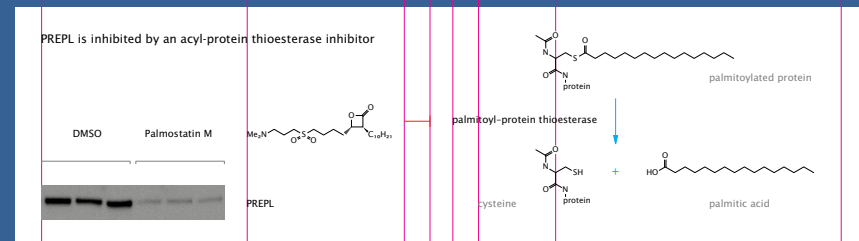
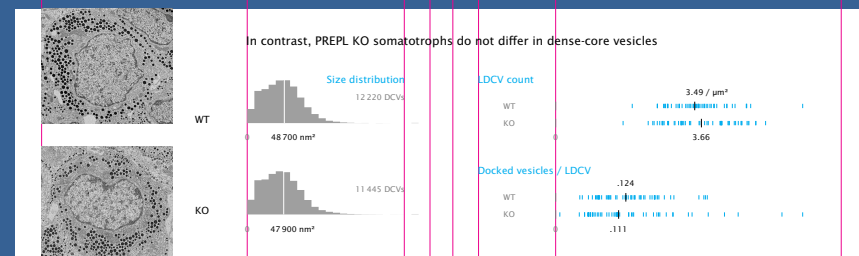
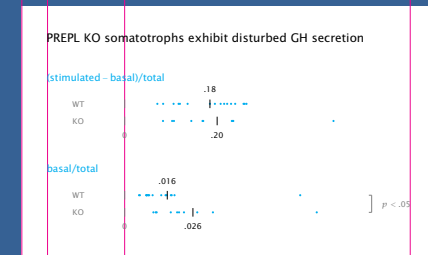
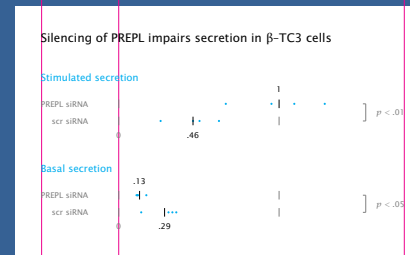
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growth-hormone deficiency
 feeding problems
 hypotonia



Patient at 6 months Child patient

We hypothesize that PREPL has palmitoyl thioesterase activity, removing palmitate from cysteine in proteins involved in regulated secretion



Using the back of the poster

Think out of the box, or rather “out of the poster,” for whatever content just won’t fit but may well be of interest to your audience—and for information they would like to have for later, such as references.

Print A4 versions of your poster and hand them out to interested participants as the perfect souvenir. Use the back of the poster to provide extra content, such as your contact details, materials and methods you have employed, and references to the literature.

Contact details can be kept minimal: a simple way to get in touch with you, such as an e-mail address, and whatever else would allow readers to find you (or your department) through a simple web search.

Materials and methods are meant here to answer the most likely questions, not to allow replication of the experiments as in a paper. They thus benefit from being shown visually, as you would on slides.

References need not be presented in the compact but not-so-readable format of papers. In particular, reveal any author that is also an author of the poster.

As an alternative to a printed handout, you could provide a URL (possibly in the form of a QR code) to a PDF version of your A4 poster—possibly then with more than just one A4 page for extra content.

Karen Rosier

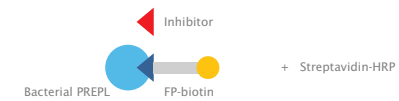
karen.rosier@kuleuven.be

KU Leuven

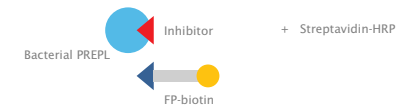
Human Genetics
Leuven, Belgium

Competition experiment with serine hydrolase inhibitor and FP-biotin

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Child patient photo taken from

Jaak Jaeken *et al.*, John Creemers *et al.*

Deletion of PREPL, a gene encoding a putative serine oligo-peptidase, in patients with hypotonia-cystinuria syndrome

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Promoting the poster

Before the poster session at a conference, you will probably mention your research to people you meet during sessions or breaks and at networking events. How about inviting them explicitly to come and see your poster with a small flyer? You can then give the flyer instead of giving a business card. Feel free to include your contact details, possibly on the back.

Working efficiently

Careful communication is not particularly difficult, but it takes time and hence self-discipline. Creating an effective research poster is clearly no exception.

Start early, so you can spread your available time across several iterations. Let the current draft rest for a few days before working further on the poster.

Make a draft by hand before starting on a computer. Envision the layout, write down all your messages, make a rough sketch of how you will illustrate them.

Design your poster in A4 even if you print it in A0, so you can copy-paste illustrations from your papers without having to redo or adjust them for readability.

Poster 27

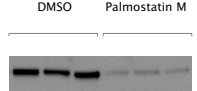
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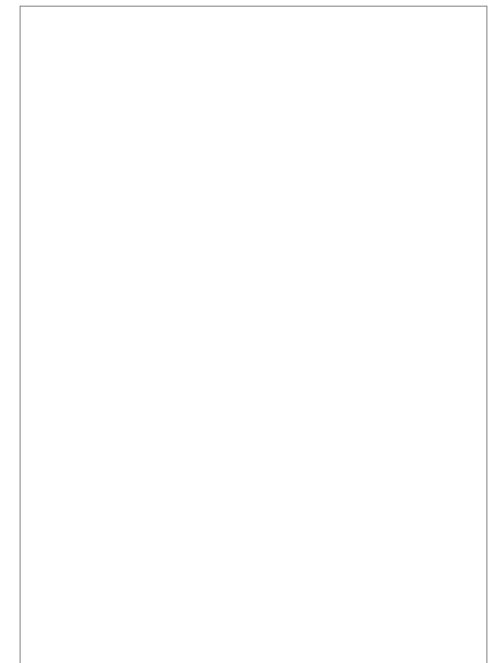


DMSO Palmostatin M

PREPL

Scale the poster to print at target size (typically A0)

Design in A4





An engineer from the Louvain School of Engineering and PhD in applied physics from Stanford University, Jean-luc Doumont now devotes his time and energy to training engineers, scientists, business people, and other rational minds in effective communication, pedagogy, statistical thinking, and related themes.

With his rational background, Jean-luc approaches communication in an original, engineering-like way that contrasts sharply with the tradition of the field, rooted in the humanities. He is thus well received by students and professionals in search of a method they can apply with the same rigor they have come to value in every other aspect of their occupations.

An articulate, entertaining, and thought-provoking speaker, Jean-luc successfully reaches a wide range of audiences around the world, in English, French, Dutch, and Spanish—as a trainer or invited speaker at an array of companies, top-ranked universities, research laboratories, and international conferences.

Actual posters presented by researchers exemplify scientific communication at its worst: few of them would pass the most common-sense sanity check, namely readability when viewed from a meter away. Yet poster sessions hold the potential of promoting efficient and meaningful networking at conferences. Staying clear of the tradition of designing posters like one designs papers for publication in journals and of formatting posters like one packs suitcases, these few pages offer no-nonsense advice not only for creating the poster itself, but also for providing extra content on “the back of the poster” (handout) and for promoting the poster at the conference—all of it illustrated with a real, award-winning poster.



Principiæ
Structuring thoughts

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