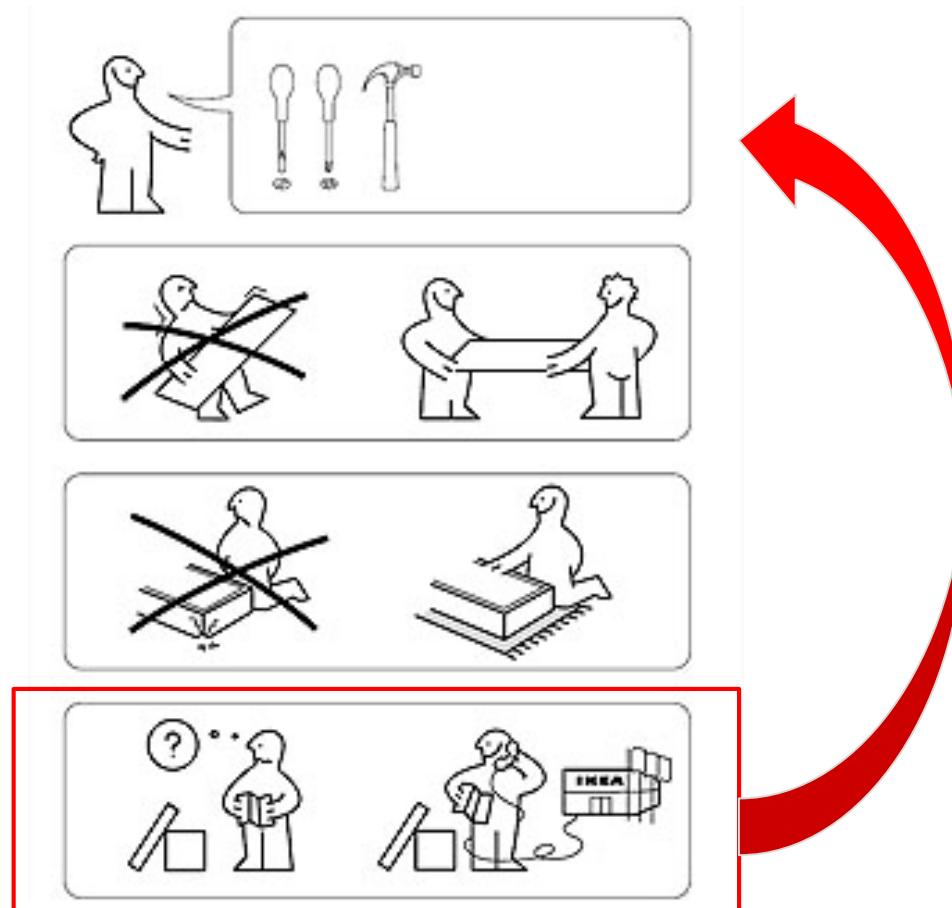


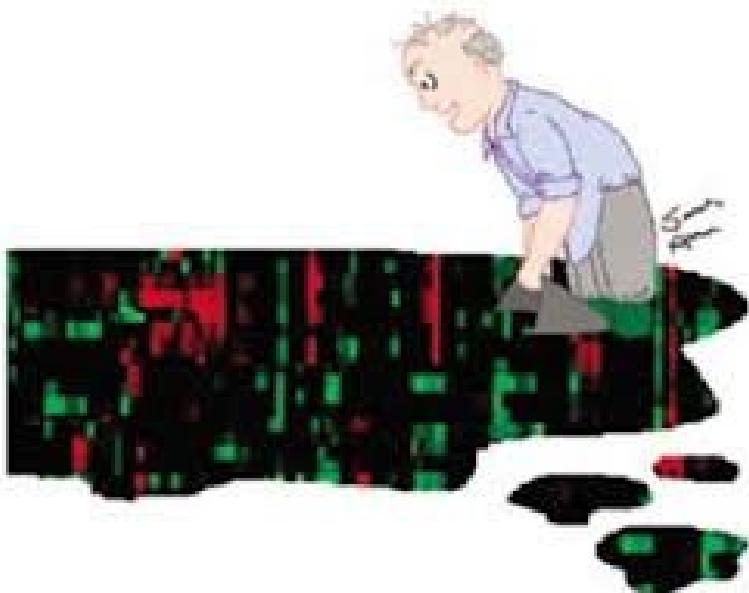
# Making the Abstract concrete

Troy Baldwin  
Department of MMI



Courtesy of IKEA

# What are you going to learn this summer?

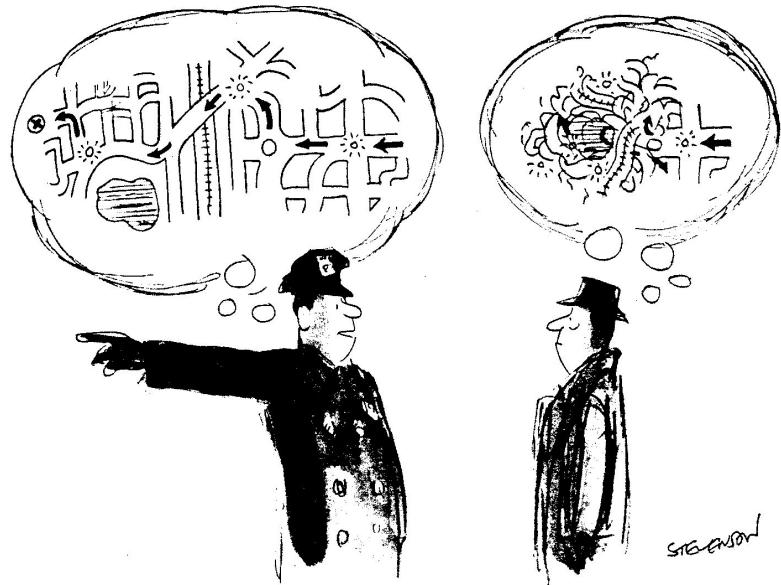


<http://www.nature.com/embor/journal/v2/n7/full/embor379.html>



<http://betsyb.blogspot.ca>

# but also...



Drawing by Stevenson; © 1976 The New Yorker Magazine, Inc.

- "I didn't SAY you were stupid."
- "I didn't say YOU were stupid."
- "I didn't say you were STUPID."

## "transferrable" (soft) skills

# The Scientific Title and Abstract



**The two most critical aspects of a scientific paper in terms of exposure are:**

1. Title
2. Abstract

**WHY??**

- First and sometimes only part of the paper read
- Tells the reader what to expect from the paper
- Draws the reader in
- Often used to select individuals for posters/talks at conferences, awards, etc.

# Tolerance of NK cells encountering their viral ligand during development

Joseph C. Sun and Lewis L. Lanier

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During development, T and B cells encountering their cognate ligands via antigen-specific receptors are deleted or rendered anergic. Like T and B cells, natural killer (NK) cells express certain receptors, such as Ly49H, associated with immunoreceptor tyrosine-based activation motif-bearing adaptor proteins that transmit activating signals through Syk family kinases. Ly49H binds with high affinity to a mouse cytomegalovirus (MCMV)-encoded glycoprotein, m157, but does not recognize self-antigens. For comparison with the behavior of immature T and B cells exposed to foreign antigens, we addressed the fate of Ly49H<sup>+</sup> NK cells that encountered their viral ligand during development by retroviral transduction of bone marrow stem cells with m157. In chimeric mice expressing m157, we observed a reduction in Ly49H<sup>+</sup> NK cells in multiple tissues and less Ly49H on the cell surface. NK cells exposed to m157 during development appeared less mature, produced less interferon when stimulated through Ly49H, and were unable to kill m157-bearing target cells. After MCMV infection, these NK cells were severely impaired in their ability to proliferate. Thus, if immature NK cells encounter ligands for their activating receptors, regulatory mechanisms exist to keep these cells in an unresponsive state.

# The Title

## Goals:

1. Provide a synopsis of the work - describes what was accomplished
2. Attracts a reader's attention

## How does one achieve this:

1. Be accurate, complete and memorable, but do not overstate findings
2. Single message
3. Begin with important point
4. Be firm and declarative (make a statement)
5. Use an active voice

Tolerance of NK cells encountering their viral ligand during development

VS

NK cells can be tolerized if their viral ligand is present during development

# Abstract

During development, T and B cells encountering their cognate ligands via antigen-specific receptors are deleted or rendered anergic. Like T and B cells, natural killer (NK) cells express certain receptors, such as Ly49H, associated with immunoreceptor tyrosine-based activation motif–bearing adaptor proteins that transmit activating signals through Syk family kinases. Ly49H binds with high affinity to a mouse cytomegalovirus (MCMV)–encoded glycoprotein, m157, but does not recognize self-antigens. For comparison with the behavior of immature T and B cells exposed to foreign antigens, we addressed the fate of Ly49H<sup>+</sup> NK cells that encountered their viral ligand during development by retroviral transduction of bone marrow stem cells with m157. In chimeric mice expressing m157, we observed a reduction in Ly49H<sup>+</sup> NK cells in multiple tissues and less Ly49H on the cell surface. NK cells exposed to m157 during development appeared less mature, produced less interferon when stimulated through Ly49H, and were unable to kill m157-bearing target cells. After MCMV infection, these NK cells were severely impaired in their ability to proliferate. Thus, if immature NK cells encounter ligands for their activating receptors, regulatory mechanisms exist to keep these cells in an unresponsive state.

# The Abstract – in pieces

## 1. Introduction/background statement

- A couple sentences on the topic, be focused
- Provide enough information for reader to understand the topic

## 2. Hypothesis

- What do you want to know

## 3. Methodology

- Highlight novelty, be general (not always necessary to include in abstract)

## 4. Results

- Logical order of results, only the most exciting pieces

## 5. Conclusions/Significance

- What has been added to the field?
- Why do we care?

# Abstract

During development, T and B cells encountering their cognate ligands via antigen-specific receptors are deleted or rendered anergic. Like T and B cells, natural killer (NK) cells express certain receptors, such as Ly49H, associated with immunoreceptor tyrosine-based activation motif–bearing adaptor proteins that transmit activating signals through Syk family kinases. Ly49H binds with high affinity to a mouse cytomegalovirus (MCMV)–encoded glycoprotein, m157, but does not recognize self-antigens. For comparison with the behavior of immature T and B cells exposed to foreign antigens, we addressed the fate of Ly49H<sup>+</sup> NK cells that encountered their viral ligand during development by retroviral transduction of bone marrow stem cells with m157. In chimeric mice expressing m157, we observed a reduction in Ly49H<sup>+</sup> NK cells in multiple tissues and less Ly49H on the cell surface. NK cells exposed to m157 during development appeared less mature, produced less interferon when stimulated through Ly49H, and were unable to kill m157-bearing target cells. After MCMV infection, these NK cells were severely impaired in their ability to proliferate. Thus, if immature NK cells encounter ligands for their activating receptors, regulatory mechanisms exist to keep these cells in an unresponsive state.

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Introduction, Question/Methods, Results, Conclusions/Significance

# Abstract Tactics

- Clear story? Read aloud to assess continuity and impact.
- Short sentences. Simplicity. Use the active voice when possible.
- Every word essential? (extra adjectives, articles that add little?) Detail buries impact (often word limits).
- PPF Verb tenses. Consistency.
- Ask someone to read it and tell you what they got from it.
- Omitting, or putting in a vague hypothesis/question turns the abstract into a blind guessing game (by reader/reviewer) that you will lose. *Why did they do the work?*
- Be sure to know and follow the guidelines (word limit, character limit, style, etc).

# Scrapie agent contains a hydrophobic protein.

S B Prusiner, M P McKinley, D F Groth, K A Bowman, N I Mock, S P Cochran, and F R Masiarz

The scrapie agent causes a degenerative nervous system disorder of sheep and goats. Considerable evidence indicates that the scrapie agent contains a protein that is necessary for infectivity [Prusiner, S. B., Groth, D. F., Cochran, S. P., Masiarz, F. R., McKinley, M. P. & Martinez, H. M. (1980) Biochemistry 19, 4883-4891], but direct demonstration of a protein moiety has been hampered by lack of sufficiently purified preparations. Employing preparations of the scrapie agent enriched 100- to 1000-fold with respect to protein, we found that digestion by proteinase K destroyed more than 99.9% of the infectivity. Diethylpyrocarbonate, which chemically modifies amino acid residues in proteins with high efficiency, also inactivated the scrapie agent in these purified preparations. Reductions of infectivity by proteinase K and diethylpyrocarbonate were not observed with less purified preparations. The agent bound to phenyl-Sepharose could not be eluted with 8.5 M ethylene glycol; however, a combination of ethylene glycol and detergents did release the agent. These observations provide good evidence for a protein and for hydrophobic domains within the scrapie agent. Whether the protein required for infectivity is the same protein responsible for the hydrophobic properties of the scrapie agent remains to be established.

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Introduction, Question, Methods/Results, Conclusions/Significance

# Abstract worksheet

Break down abstract into manageable pieces:

- Introduction: what is this project about, why is it important
- Hypothesis: what was the question behind your project
- Methods: how did you accomplish your goals
- Results: what did you find
- Conclusion: what do your results mean, what is the significance of your findings

*Write your title last*

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