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WRITING AN ABSTRACT

AN HYPOTHESIS-TESTING STUDY

A DESCRIPTIVE STUDY

WRITING AN ABSTRACT

AN HYPOTHESIS-TESTING STUDY:

1. What is the question (= hypothesis)?
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Step 1. Carefully consider the meeting.

- Think about the focus of the meeting by reviewing abstract categories.
- Review previous year's abstracts.
- Review keywords or index topics. Does your project clearly fit into a category? If not, can the emphasis be changed?

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Example: your work concerns endothelial cell differentiation. For submission to The Endocrine Society, emphasize the growth factor.

Title: Renal Growth Factor Inhibits Human Endothelial Cell Differentiation.

Step 2. Review instructions very carefully.

Some are very rigid about format, requiring specific subheadings. Some instructions include info about reasons for rejection. Follow the rules.

Remember that oral presentation at one national meeting usually precludes oral presentation at another.

Most national meetings are rigid about publication before oral presentation.

Step 3. Expect to write 5-6 drafts.

RESULTS

METHODS

INTRODUCTION

CONCLUSION

TITLE

Step 4. Reorganize into required sequence.

RESULTS

Start writing the abstract with an outline of your results, usually with the most novel first, compared with controls, in order of diminishing novelty.

Usually it is not reasonable to present results in chronological order.

In some cases, results need to be presented to build up a new point, e.g., in vivo, histology, cellular data, molecular.

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Organizing results first establishes authors.

Refer to Harvard guidelines
http://www.hms.harvard.edu/fa/guide_doc.html

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	S-GAG (ug/sponge)	Exp/Control
Control	36.8 ± 5.5	
Cyclic HP	99.4 ± 19.9	2.7 ($p<0.01$)
Continuous HP	114.1 ± 8.5	3.1 ($p<0.01$)

RESULTS

"After 15 days, the S-GAG content in sponges that were exposed to cyclic and continuous hydrostatic pressure was 2.7-fold and 3.1-fold greater than that in the control, respectively (Table)."

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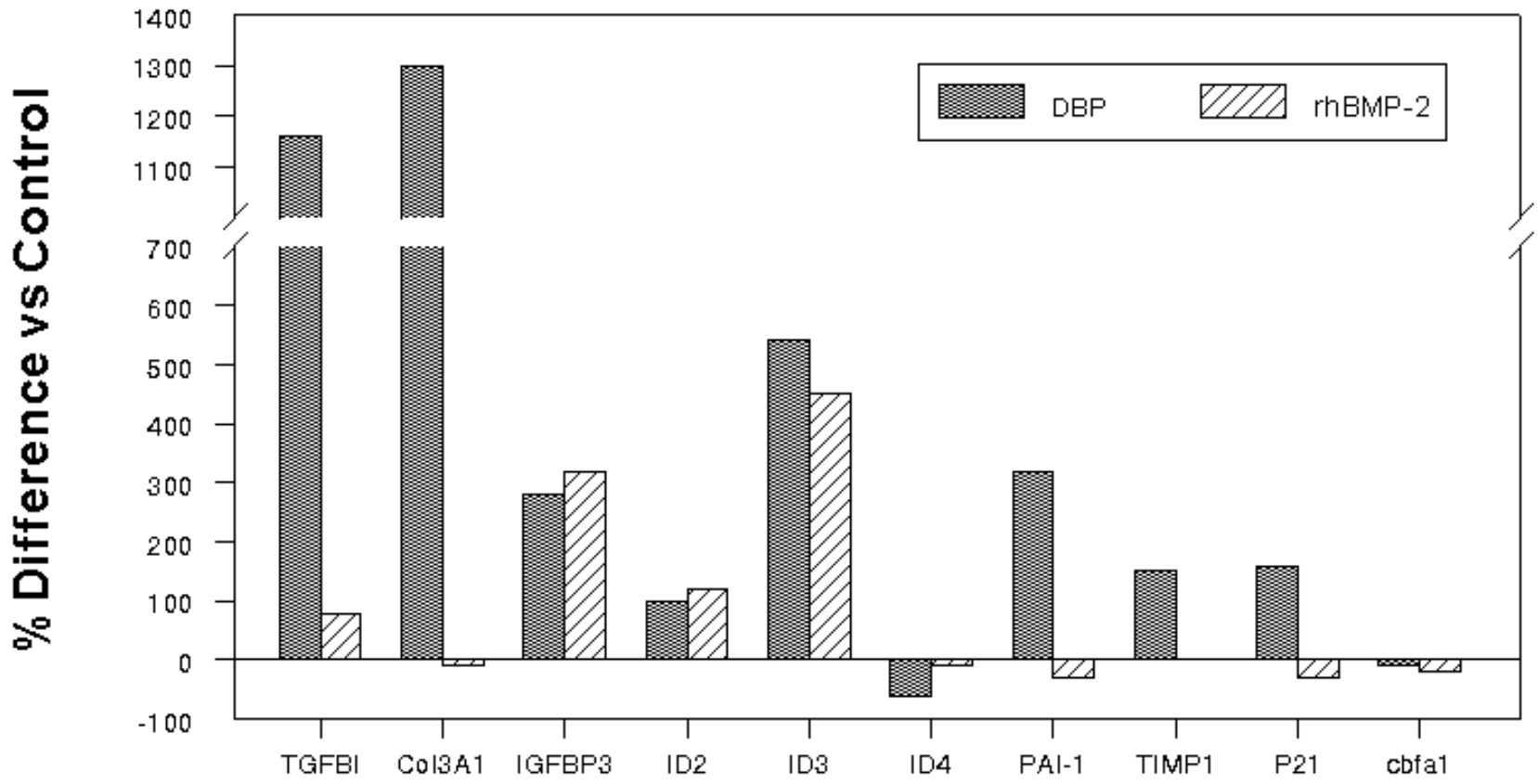
RESULTS

Only present results in which you have complete confidence, to avoid embarrassment of withdrawal.

Appropriate statistical analyses are essential.

Sometimes graphs can be very helpful to save space.

RESULTS


% Difference vs Control
1400
1300
1200
1100
700
600
500
400
300
200
100
0
-100
DBP
rhBMP-2
TGFBI
Col3A1
IGFBP3
ID2
ID3
ID4
PAI-1
TIMP1
P21
cbfa1

METHODS

- Methods should be concise, but informative
- Sequence of methods must mirror the sequence of results
- Check whether references are permitted
- If the abstract includes many different outcome measures, and instructions permit, it may save space if you present results after each method

INTRODUCTION

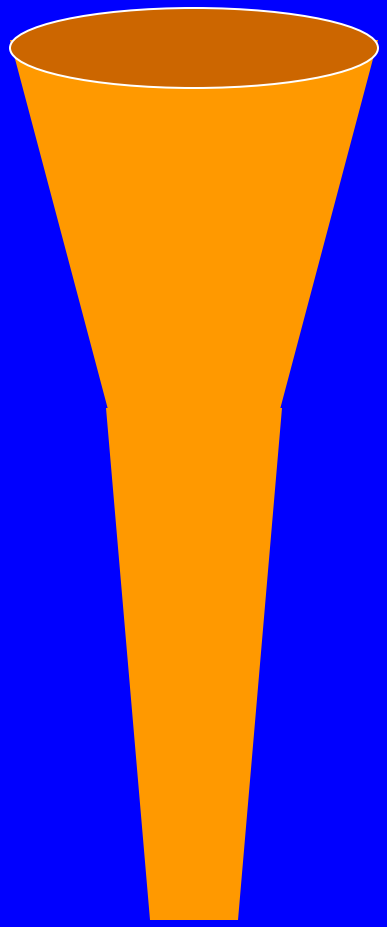
- **FOR A DESCRIPTIVE PAPER**
  (A new method, apparatus, or material, e.g. a gene)

  ~ Describe the need
  ~ Problems with available method
  ~ What does the new method accomplish and what are its advantages.

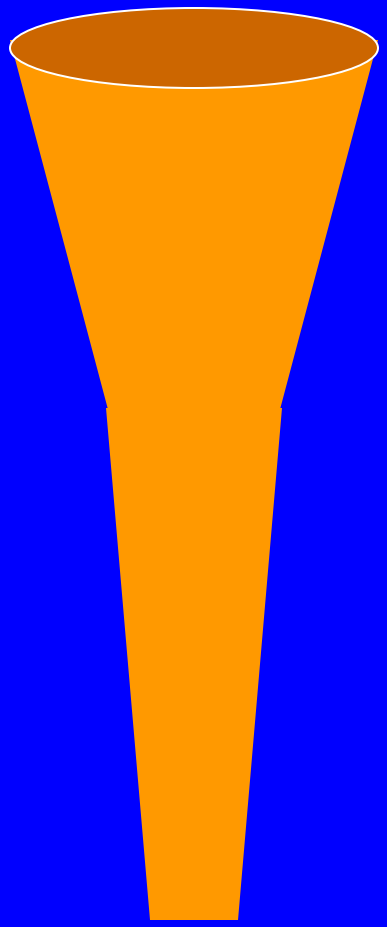
INTRODUCTION

- State concisely
  - the problem
  - the gap in knowledge
  - the hypothesis
  - the general experimental rationale and approach
    - In vitro/in vivo
    - Species
    - Retrospective, Prospective
    - Case report; Case series; DB,PC,RCT

INTRODUCTION



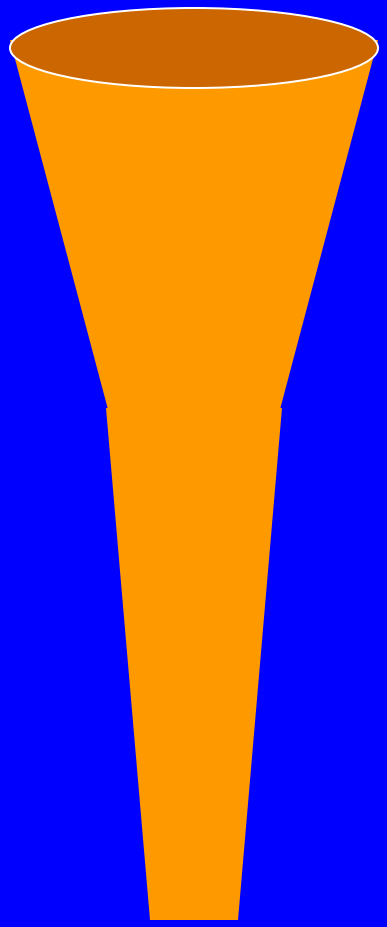
INTRODUCTION



KNOWN

What is the topic

INTRODUCTION



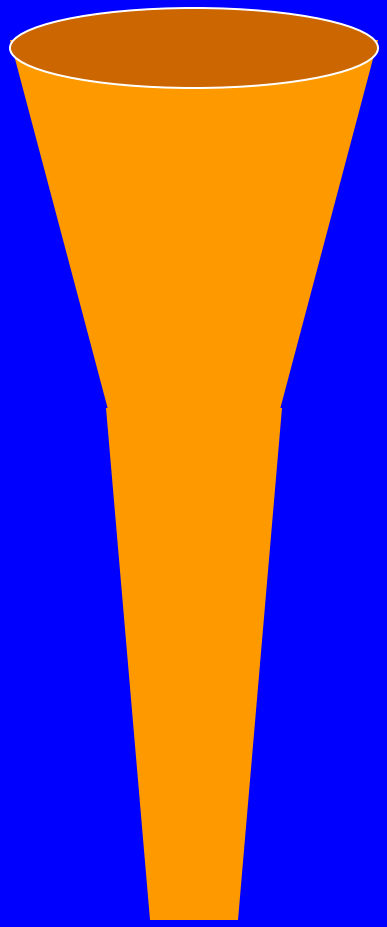
KNOWN

What is the topic

UNKNOWN

One sentence; rationale

INTRODUCTION



KNOWN

What is the topic

UNKNOWN

One sentence; rationale

QUESTION

The focus of this abstract; inevitable

INTRODUCTION

- **HYPOTHESIS**
  - **Should be crisp**
  - **Use the word “hypothesis”; it is not a “purpose” or a prediction**

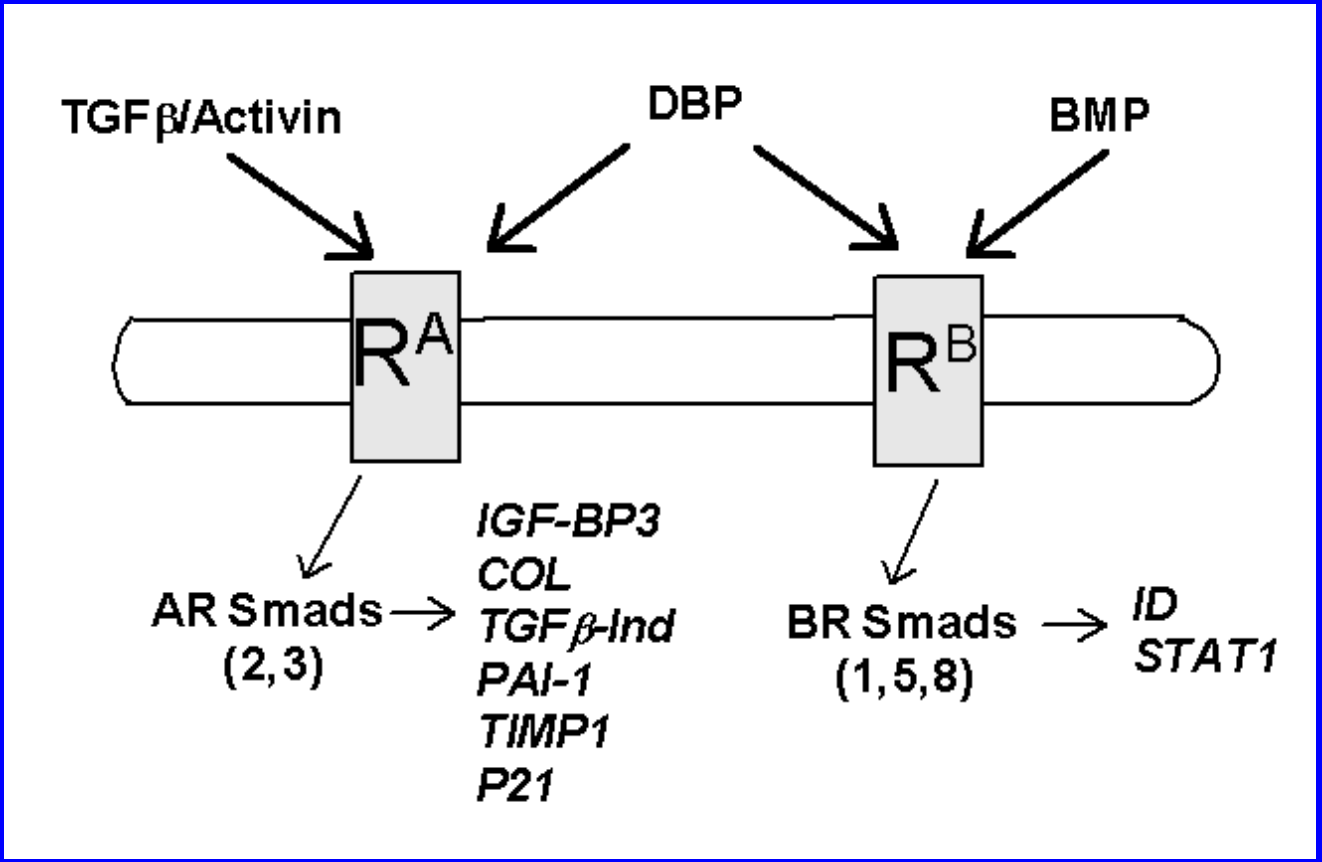
“This macroarray analysis tested the hypothesis that DBP and BMP-2 affect similar signal pathways prior to chondroinduction in human dermal fibroblasts”

CONCLUSION

Summarize the findings and answer the question “so what?”

“Although BMP-2 was originally isolated as a putative inductive factor in DBP, rhBMP-2 alone and DBP do not affect all the same genes or in the same ways.”

CONCLUSION



Discussion Figure. Effects of different families of ligands on Smads. TGFβ/Activin members bind to receptors R^A that activate AR Smads whereas the BMP/GDF factors activate BR Smads [3]. On the basis of observed Smad-target gene changes, we conclude that DBP acts through both AR and BR Smads.

CONCLUSION

Conclusion should tie back to the Introduction and the Title.

Example:

TITLE: Evaluation of 2 novel approaches for assessing the ability of demineralized bone allografts to induce new bone formation

CONCLUSION

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Example:

TITLE: Evaluation of 2 novel approaches for assessing the ability of demineralized bone allografts to induce new bone formation

CONCLUSION: These data indicate that the assays used in this study may not be appropriate indicators of bone induction.

TITLE

Subject Verb Object

Whenever possible, use strong, active verb.

Avoid uninformative terms like "Effects of…" Instead, use " X stimulates", "XX inhibits", "Biphasic stimulation of…".

Include Species; *In Vitro/In Vivo*.

get to the heart of the results.

Important word first.

"Gender differences in desomycin's toxic effects on porcine brain cells in vitro."

TITLE

Descriptive studies

Examples

Hip, a Novel Cochaperone Involved in the Eukaryotic Hsc70/Hsp Reaction Cycle

An improved, Noninvasive Method for Monitoring Blood Gases in the Newborn

Step 4. Reorganize into required sequence.

Rewriting to avoid redundancies, to make transitions, to add emphasis.

Step 5. Word count

200, 250, 400, 1000

Some ask for character count

Step 6. Authorship.

Best to do this when you make the list of the results you want to include.

Authorship may look different after you have first draft.

Let's talk more about authorship problems.

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Some words about words

- **Continuity**
  - **Repeat key terms exactly (decreased, declined, fell) (expression and transcription)**
  - **Consistent order of treatment groups**
  - **Parallel form for parallel ideas**
- **Signal words and phrases**
  - **…the hypothesis…**
  - **We found; We conclude …**
  - **We report … (for a descriptive paper)**
  - **In sum; in conclusion …**
  - **These results suggest …**

REASONS FOR REJECTION

- Abstract not well organized
- Required information was not given (Objective, Methods, Results, Analysis, Conclusions)
- Nature of problem not explicit
- Abstract is not original research
- Importance of the problem is doubtful

REASONS FOR REJECTION

- No well-defined criteria given for evaluation of variables
- Choice of controls is questionable
- No control groups reported
- N=1
- Methods used were not appropriate (Not sufficiently precise; Sampling method was flawed; Insufficient sample size

REASONS FOR REJECTION

- Conclusions do not follow from the data
- Conclusions have more limitations than implied by the authors
- Correlations may be fortuitous insofar as no plausible cause-and-effect relation has been suggested

Example - Introduction

Studies with human and animal culture systems indicate that a sub-population of bone marrow stromal cells has the potential to differentiate into osteoblasts. There are conflicting reports with colony assays on the effects of age on human marrow-derived osteogenic cells. In this study, we used a 3-dimensional culture system and quantitative RT-PCR methods to test the hypothesis that the osteogenic potential of human bone marrow stromal cells decreases with age.

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Example – Methods & Results

Marrow was obtained from 39 men aged 37 to 86 years, during the course of total hip arthroplasty. Low-density mononuclear cells were seeded onto 3-dimensional collagen sponges and cultured for three weeks. First, histological sections of sponges were stained for alkaline phosphatase activity and were scored as positive or negative. In the group ≤50 years, 7 of 11 samples (63%) were positive, whereas only 5 of 19 (26%) of the samples in the group ≥60 years were positive (p=0.0504).

Example – Methods & Results

Second, we isolated total RNA from five cell preparations before and after 3 weeks of culture. As revealed by RT-PCR, there was no expression of alkaline phosphatase or collagen type I mRNA before culture, however there were strong signals after 3 weeks, an indication of osteoblast differentiation *in vitro*.

Example – Methods & Results

Third, we performed a quantitative, competitive RT-PCR assay with 8 samples (age range 38-80) and showed that the group ≤50 years had 3-fold more mRNA for alkaline phosphatase than the group ≥60 years (p=0.021). There was a significant decrease with age (Spearman r = - 0.78, p=0.028).

Example – Conclusion

In sum, these histoenzymatic and molecular data indicate that the osteogenic potential of human bone marrow cells decreases with age.

Example of Descriptive Abstract

Introduction:

Hip fractures are associated with significant morbidity and mortality, yet fewer than 30% of hip fracture patients worldwide receive osteoporosis evaluation and treatment. We had previously found that only 10% of hip fracture patients admitted to our hospital were vitamin D-sufficient [25-hydroxyvitamin D (25OHD) >32 ng/mL]. That motivated us to design, implement, and evaluate multidisciplinary, in-hospital care pathways to improve vitamin D status and osteoporosis care, including computer-assisted admission and discharge components.

Example of Descriptive Abstract

Method of evaluation:

Effectiveness of Admission Pathway was defined as measurement of serum 25OHD during the hospital admission and effectiveness of Discharge Pathway, as a discharge prescription for calcium/vitamin D.

Note example of parallelism

Example of Descriptive Abstract

Conclusion:

According to our ongoing analysis to increase effectiveness of fracture care pathways, computer reminders, multidisciplinary teams, and retraining are necessary to advance the care of fracture patients.

References:

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