文献综述与科技写作

——方法和引言

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回顾上堂课的内容

（一）、科技论文正文的标准结构（IMRAD）

- **I**ntroduction （导言）：
  研究的是什么问题
- **M**aterials and Methods （材料与方法）：
  如何研究这个问题的
- **R**esults （结果）：
  研究的结果如何
- **D**iscussion and **C**onclusions （讨论和结论）：
  这些研究结果有什么意义

回顾上堂课的内容

（二）讨论和结论：Discussion & Conclusion

原则：

- 撰写讨论时要避免含蓄，尽量做到直接、明确，以便审稿人和读者了解论文为什么值得引起重视。
  Place your results in a wider context
- 是论文中最有创造性见解，take home message
- 回答：
  为什么出现这样的结果？
  出现这样的结果意味着什么？

讨论和结论：Discussion & Conclusion

结构和元素：

- **Restate the aim(s)** of your study (RE-AIM)
- **Review key results** obtained in your study (RE-RES),relating them to how your overall aim has been achieved
- **Relate** your work **to broader research areas** to show your contribution to the field by:
  ① **Comparing** your results/work with previous results/work(CP)
  ② **Explaining** key results(EXP)
  ③ **Generalizing** on the basis of key results(GEN)
- **Evaluate the significance** of your results/study(SIG)
- Acknowledge **limitations** of your study(LIM)
- **Recommend** future research or application(REC)

今天的主要内容（一）

科技论文正文的标准结构（IMRAD）

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材料与方法 Materials and Methods

具体说明通过哪些技术途径，如何解决论著研究的问题。

1. 采用的材料或方法可被其他研究者参考、借鉴 （可重复性）；
2. 采用什么样的理论或模型；
3. 为审稿人和读者评价论著可靠性、可信性提供依据。

材料与方法 Materials and Methods

基本元素：

- 实验材料及试验对象
- 实验方法

科学研究设计

严谨的科学研究方法是得到准确实验结论的关键所在。

一个简单的小实验，探究蜗牛喜欢什么样的气味。讨论以下三种方法的优劣。

蜗牛的食物选择	方案	方案设计
分别被糖水、盐水、白醋、白酒、牛奶浸泡过的青瓜片	1	直接把5只蜗牛分别放到青瓜片上看哪只爬下来
	2	把5种味道的青瓜同时摆在5只蜗牛前面看蜗牛的选择情况
	3	轮番在5只蜗牛面前呈现不同味道的青瓜，看哪次爬到青瓜上的蜗牛最多

框架

- 做什么　　研究设计与实验概要
- 怎么做
  1）方法和仪器的描述
  2）数据分析
  3）准备或制备
  4）假设
  5）变量与指标
- 为什么要做　　说明实验步骤是为了解决什么问题，尤其在关系不是很清楚的实验步骤

注意事项

- **篇幅** —— 充分、准确阐述 做了什么&如何做
- **测量单位** —— 国际单位制
- **动词时态** —— 方法均为过去式 “we measured”
  统计方法中用现在式描述数据
- **括号内信息** （材料浓度、剂量、制造商、仪器型号等等） —— 不打断句子连贯性，说明细节
- **视角** —— 避免过多以 We 开始的句子
- **样本大小** —— 确保整个方法节和整篇论述中数总和一致

材料与方法　Materials and Methods

- **材料** Materials
- **试剂** reagents
- **方法与技术** Methods and techniques
- **处理（浓度、时间、对照、方法）** Treatments (concentrations, time, control, approaches)
- **数据的处理（分析方法、统计、表达、数据库）** Data analysis (Statistics, significance analysis, data presentation, data sources and banks

材料 Materials

- **物种　species**

  学名 scientific name,　　拉丁文

  属名+种名 Genus + species （有些情况下要加命名人名字）

  Arabidopsis thaliana Heynh. 鼠耳芥属+拟南芥

- 第一次出现，要全称；第二次出现，属名简写+种名
- 用斜体（*Italy*）

例子：　人，human, *Homo Sapiens, H. sapiens*
家蚕，　silkworm, *Bombyx mori, B. mori*
拟南芥，*Arabidopsis thaliana*，　*A. thaliana*

材料 Materials

- **细胞株 Cell line**

  来源： 物种、组织、实验室

  命名

例子：

Embryogenic cell line, Spli-221, of S.litura was from The Entomology Institute of SUN YAT-SEN University, Guangzhou, China.1

Schneider I . Cell lines derived from late embryonic stages of *Drosophila melanogaster* (Schneider et al., 1972).
J. Embryol. Exp. Morphol. 27: 353-365, 1972. PubMed: 4625067

材料 Materials

- **试剂盒或特殊的试剂**

  来源：公司、购买的地点、国家

例子：

Grace's insect medium (Invirogen Co., Guagnzhou, China)

His-tag affinity columns (EMD Biosciences, Darmstadt, Germany)

Blotting membranes (Hybond-C) were purchased from Amersham Bioscience Inc. (Piscataway, NJ, USA).

材料与方法　Materials and Methods

- **饲养或培养的环境和条件**

  培养基、光照、温度、湿度、周期

Spodoptera litura Fabricius (Lepidoptera: Noctuidae) and Spli-221 cell line were from The Entomology Institute of SUN YAT-SEN University, Guangzhou, China. Larvae were reared an **artificial diet at 26°C in 70-80% humidity and a photoperiod of 12 h light and 12 h dark** until they reached the pupal stage or became adult moths. The artificial diet used for rearing the insect **contained 100 g soybean powder, 80 g wheat bran, 26 g yeast, 8 g casein, 8 g Vitamin C, 1 g choline chloride, 2 g sorbate, 0.2 g cholesterol, 0.2 g inositol, 26 g agar and 2 ml formaldehyde in one liter**. **The Spli-221 cell line was cultured at 28°C in Grace's insect medium (Invirogen Co., Guagnzhou, Guangdong, China) containing 10% fetal bovine serum. Cells were passaged every 4 days using a 1:4 dilution of cells.**

材料与方法　Materials and Methods

- **处理条件和方法**

  药物处理、物理处理、化学处理

  时间、样本（品）数量

例子：

For hormone treatments, 20E and JH III (Sigma Co., St. Louis, MO, USA) were first dissolved in DMSO and then diluted with water to the concentrations to be tested with a final concentration of Me2SO at 0.1 % (v/v) in water. Four microlitres of a solution of either 20E or JH III at different concentrations was injected into larvae at the thoracic region on the first day (W0) of the wandering stage of the fifth instar. Four microlitres of Me2SO at a concentration of 0.1% (v/v) was used as the control. After 6, 12, 24 and 48 h, the midgut, fat body and epidermis were dissected carefully in 0.75% NaCl insect saline. All the samples were immediately frozen with liquid nitrogen and stored at -80 °C until they were used for RNA extraction.

材料与方法　Materials and Methods

●**方法**

例子：

Immunohistochemistry localization of SlSCPx, SlSCPx-t and SlSCPx-2 were performed as described by Feng et al. [48].

Cytoplasmic extracts were prepared as described by Ko and Puglielli [14] with some modifications.

The 2,160-bp regulatory sequence was examined for the presence of putative regulatory elements by using the MATINSPECTOR program (http://www.genomatix.de)

Cells were broken by as previously described [9].

↓

Cells were broken by ultrasonic treatment as previously described [9].

材料与方法　Materials and Methods

●**方法**

例子：

For Western blot, protein extracts (50 μg) were separated in 12% SDS/PAGE and transferred to a nitrocellulose membrane. Anti-BmPOUM2 was diluted 1:2,000 and in 1% (wt/vol) BSA in TBST (10 mM Tris-HCl, pH 7.5, 150 mM NaCl, 0.05% Tween 20), and the second antibody of horseradish peroxidase (HRP)-conjugated goat anti-rabbit IgG was diluted 1:1,000 (Dingguo Biotechnology) in the same blocking buffer. The procedure was the same as described in the previous report (5).

方法描述、文献引用应尽可能详细、准确！

材料与方法　Materials and Methods

●处理条件和实验数据获取方法

重复、统计

例子：

Co-transfection were independently repeated three times (n=3) and the average expression levels of the target genes were represented as mean ± standard error (SE).

The significance analysis of the differences between the treatments and the control were performed using ANOVA followed by Duncan's Multiple Comparison Test. The data represent mean ± SD, n =3. Asterisks "**" and "*" indicate significance at $p < 0.01$ and $p < 0.05$ levels, respectively. The cholesterol titer in the hemolymph was calculated as μM of hemolymph.

注意事项

不要写成“实验指导”， 不要分点来写，不要过细，浪费篇幅。要有重点地写

棉铃虫是1991年采自河南偃师棉田第二代，一直在室内连续用人工饲料饲养。

1.2 中肠提取及BBMV制备

棉铃虫幼虫BBMV的制备参照Wolfersberger等(1987)介绍的方法。过程如下：

1. 幼虫置于冰上15min，将截取的中肠纵向剖开，用预冷的BBMV匀浆缓冲液A（300mM 甘露糖醇，5mM EGTA，17mM Tris-HCl，pH7.5）清洗；
2. 吸干水，称重，加9倍中肠重量的BBMV匀浆缓冲液A，将中肠用玻璃匀浆器在冰上充分匀浆，每匀浆1分钟，冰冷1分钟；
3. 匀浆液中加入等体积的24mM $MgCl_2$，充分混匀，置于冰上15min；
4. 离心（4℃，4500rpm，15min）；
5. 上清液进一步离心(4℃，16000rpm，30 min)；
6. 弃上清，沉淀加0.5倍匀浆液体积的冰冷缓冲液A悬浮，再加入等体积的24mM $MgCl_2$，重复步骤4, 5；
7. 第2次16000rpm得到的沉淀即BBMV，悬浮于冰冷的缓冲液B（25mM Tris/ 150mM NaCl/5mM EDTA, pH 7.4）中，液氮速冻，保存于-70℃的冰箱中备用。

1.3 脂筏制备

参照Lygren等（2005）的方法进行适当改进，详细过程如下：

1. BBMV悬浮液与等体积预冷的2% Triton X-100混匀，冰上静置30分钟，期间用预冷的注射器抽吸15次；
2. 混合液与60% Optiprep（Axis-shield公司）混匀，制成40%的浓度，置于离心管底部，上层依次覆盖30% Optiprep、5% Optiprep；
3. 用5% Optiprep将各管平衡；
4. 超速离心（Beckman公司，OPTIMA L-80XP），40000rpm，3小时；
5. 从上往下依次收集溶液，每次1ml，共12等份。

材料与方法　Materials and Methods

- 明确描述实验对象和方法的选择，医学论文中还应说明实验过程是否符合伦理学要求；
- 详细描述实验方法和实验步骤；
- 列举建立方法的参考文献，并做简要描述(但不需全部重复描述)；
- 如果对已有方法进行了新的或实质性的改进，就要清楚地说明改进的理由

注意：不要CTRL+C/V！

今天的主要内容（二）

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引言：Introduction

引言在论著中的重要作用：

1. 激发读者对本论著的兴趣；
2. 为读者提供理解本论著的背景材料。

注意点：

1. 直截了当，抓住要点；
2. 尽可能简短，叙述清楚包含足够的信息，并且可读性强。

引言：Introduction

内容：

1. 已知、未知和疑问
   - ① 研究的问题是什么（what）？
   - ② 为什么提出这个问题（why）？
   - ③ 说明问题的由来，陈述在相关论著中，哪些是已知或确认的，哪些是未知或存在疑问的。

2. 不包括答案、结果或结果的意义
   - ① 不包括回答问题的答案，
   - ② 不包括研究结果以及从结果推导而来的意义。

引言的作用

1、引出研究课题 → 引起读者的兴趣为要点

2、聚焦研究课题 → 不使论文包含过多章节条目

3、讨论前人研究不足 → 通过提问来引出新研究问题

4、提出新的研究方法 → 方法可能相同，但因素不同

引言的作用

1、引出研究课题

e.g 1：
What happens in the language classroom is intimately linked to social and political forces in the world at large, and the practitioners must not only be aware but also understand these links if they are to be fully effective in their work.

e.g 2:
Research on learner beliefs in the last two decades has given us interesting insights into what language learners' view are concerning the teaching and learning of a second or foreign language.

引言的作用

2、聚焦研究课题

e.g 3：
The purpose of this study is to investigate one of the consequences of the simplification phenomenon, i.e. a reduction in lexical density, in a number of texts.

e.g 4:
...the present paper aims to synthesize studies in linguistics and communication into the research into dubbing, focusing on the pragmatic comprehension of this form of translation.

引言的作用

引出研究课题 → 聚焦研究课题

宽泛表达 → 缩小集中

引言的作用

3、讨论前人研究不足

e.g 5：
One of the criticisms of using parallel texts...has been that" translated language is different from original language". A research question which can be answered statistically then is "Are translated texts simpler than comparable monolingual texts in the target language?“

e.g 6:
Research in the psycholinguistic tradition focuses mainly on task design and fails to see the importance of the interaction of learner learner factors and the setting. Furthermore, little research has been done on either the learner factor or the setting...

引言的作用

4、提出新的研究方法

e.g 7:
The purpose of this study is to investigate one of the consequences of the simplification phenomenon, i.e. a reduction in lexical density, in a number of texts. First, original texts in English and Chinese and their translations (parallel texts) will be compared and then the respective translated texts in the two languages will contrasted with other original texts in the two language (comparable texts) for simplification in lexical density.

引言的语言运用

1、动词运用与引用

（1）高频率使用文献综述的动词，如：
suggests, shows, argues, explains, finds, points out；
（2）依据原作者关于某研究问题的立场选择动词，如：
表示中立：notes, explains, comments, writes, says, feels, thinks, states, finds, makes the comment, mentions, observes, reasons, contends；
表示勉强同意或承认：acknowledges, concedes, admits, grants, recognizes；
表示较弱的主张：implies,suggests；
表示强烈的主张：argues(that), asserts, emphasizes, insists, believes, endorses, points out, confirms；
表示异议：argues(against), denies, disputes, refutes, rejects.

引言的语言运用

1、动词运用与引用

动词时态的选择——微妙灵活

a）突出研究者（Author-Prominent）：

一般过去时态

b）突出研究主题（Information-Prominent）：

完成时态

c）对当前已接受事实得陈述：

一般现在时态

引言的语言运用

2、其他语言特征

前人尚未解决的问题或留下的技术空白时，修辞上往往通过使用“翻译的连接词”、“否定数词”、“动词的否定”，并用一般时或者完成时来实现：

引言的语言运用

e. g：
1）前人的研究：A number of studies have investigated on X.
Some work has been done on X.
Much research has been carried out on X.
标记词（signal word）：However, But, Nevertheless
研究空白（gap）：more studies should be conducted on Y.
few studies has been carried out on Y.
little is known about Y.
公式：pattern= signal word+ gap+ research topic
得出：A number of studies have been investigated on X. Howver, more studies need to be carried out on Y.

引言写作的注意事项

1、开门见山，不绕圈子。
（避免大篇幅讲述历史渊源和立题研究过程）

2、言简意赅，突出重点。
（切忌过多叙述同行熟知及教科书中的常识性内容）

3、回顾历史有重点，内容紧扣有依据。
（围绕标题用几句话介绍背景）

引言写作的注意事项

4、尊重科学，实事求是。
（评价论文价值要恰如其分，用词要科学）

5、内容不与摘要雷同，不用客套话。

6、篇幅不宜太长。
（太长可致读者乏味，太短不易交代清楚。一篇3000—5000字的论文，引言字数一般在300—500）

引言：Introduction

结构： General Framework

1. CONTEXT：
General statements about a field of research to provide a general context for the writer's study

2. REVIEW：
Statements (ranging from 'general' to 'specific') about previous research to provide pertinent information for the writer's study

3. GAP：
Statements about specific issues or limitations in previous research that motivated the writer's study

4. PURPOSE：
Statements presenting the specific aim(s) of the writer's study

见补充材料

CONTEXT

1. **General Area**
   Should not be too broad in scope. For example, if open with a statement about the importance of water, the idea would be so broad that it would be difficult to narrow down quickly to ideas in the sub-area(s)
2. **Sub-area(s)**
3. **Key-topic**

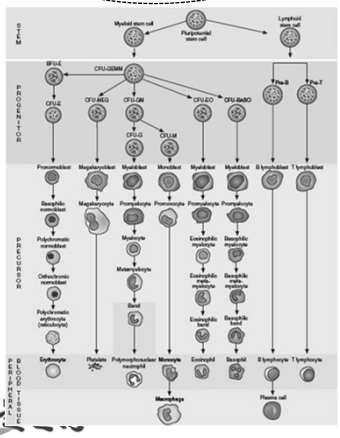
REVIEWS

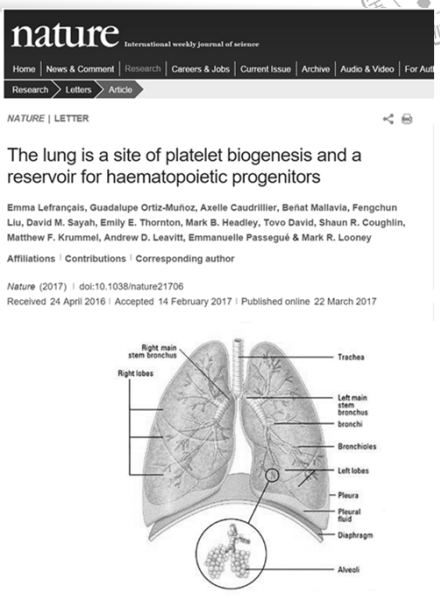
1. **Organizing the review: establishing cohesion (jointed and focused)**
   ① Chronology
   ② Similarities or differences
   ③ Cause-effect
   ④ Problem-solution
2. **Critical evaluation**
   ① Positive
   ② Negative
   ③ Neutral

GAP

1. Those related to inadequacies and limitations.
2. Those related to conflicting or controversial findings or ideas.
3. Those related to extension of ideas in new directions.

例子：Conflicting or Controversial Findings or Ideas





PURPOSE--aims and significance

1. **Aims**
   it is important to distinguish between the `what' {aims) and the `how' (strategy, framework, procedure or methodology chosen)
2. **Significance**
   positive outcomes that may emerge on the basis of results you had anticipated
3. **Scope**
   These statements typically present what is included in contrast to what is excluded so as to clearly define the boundaries of the research

回顾所有内容

- 论文题目：精确（accurate），完整（complete）,特异（specific），明确（unambiguous）,简练（concise），重要的词放在开始（important word first）
- 作者姓名+通讯地址
- 摘要+关键词
- 引言(Introduction)
- 材料与方法(Materials and methods)
- 结果(Results)
- 讨论与结论(Discussion & Conclusion)
- 致谢
- 参考文献

1. Introduction
   Explain why your idea is important;
2. Methods
   Describe the methods used to collect your data;
3. Results
   Describe your data - but only the data required to support your idea;
4. Discussion
   Explain how the data supports your idea, and what other implications arise from the results

Introduction

- Context : general area->sub area->key topics (transition, repetition)
- Review
- Gap
  - Organization
    - ◆ Chronology
    - ◆ Similarities or differences
    - ◆ Cause-effect
    - ◆ Problem-solution
  - Evaluation: positive, negative, neutral
- Purpose
  - ➢ inadequacies and limitations
  - ➢ conflicting or controversial findings or ideas
  - ➢ extension of ideas in new directions
- Specific gaps
- Aim
- Significance
- Scope

Results

- Location
- Highlighting of key data
- Commenting on key data
  1. Generalisations
  2. Comparison/Contrast
  3. Explanations/speculations

Conclusion

- **Restate the aim(s)**
- **Review key results**
- **Relate** your work **to broader research areas** to show your contribution to the field
  - **a) Comparing** your results/work with previous results/work
  - **b) Explaining** key results
  - **c) Generalizing** on the basis of key results
- **Evaluate the significance**
- Acknowledge **limitations**
- **Recommend** future research or application

1. When do you start writing?

Satisfied data, Tell a story

2. How do you start writing?

Title➔Abstract➔Introduction➔Methods➔Results➔Discussion

Methods➔Results➔Discussion➔Introduction➔Abstract➔Title