VII. Discussion

Scientific Reading and Presentation

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华大生命科学研究院
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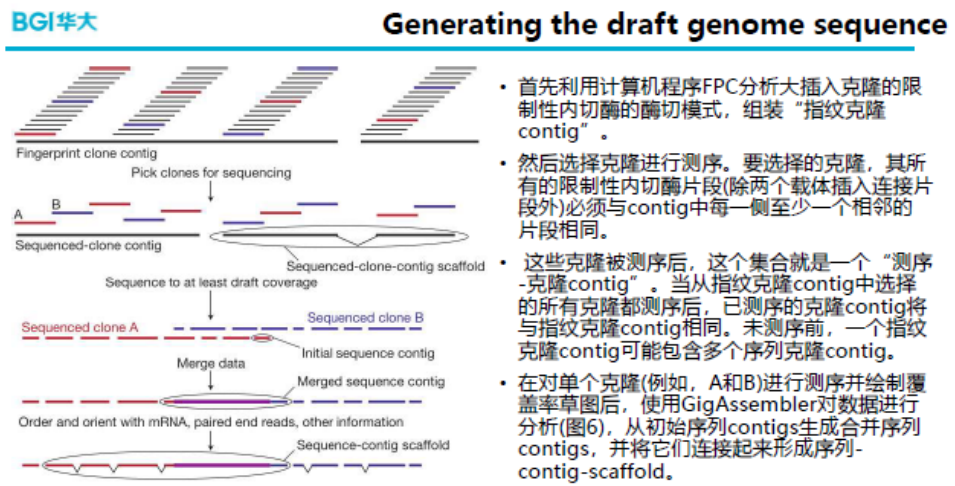
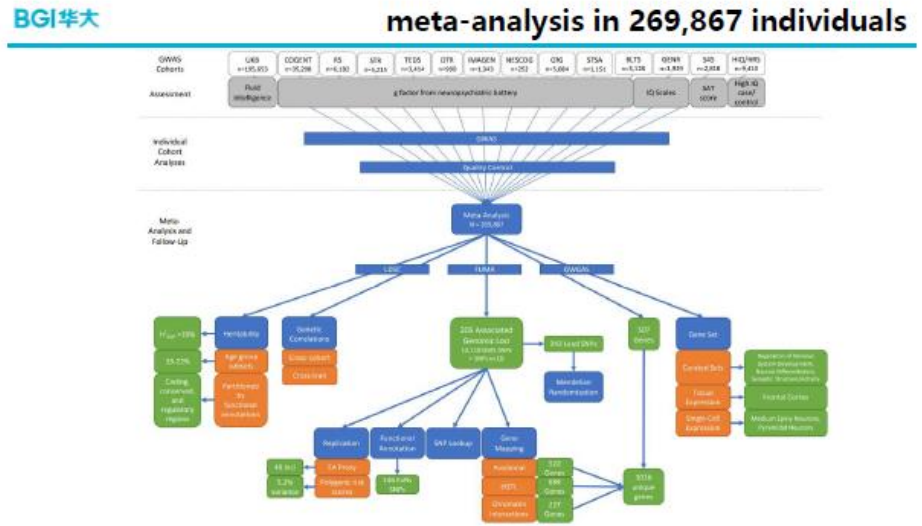
Improvement: less is more

1st presentation



- 首先利用计算机程序FPC分析大插入克隆的限制性内切酶的酶切模式，组装“指纹克隆contig”。
- 然后选择克隆进行测序。要选择的克隆，其所有的限制性内切酶片段(除两个载体插入连接片段外)必须与contig中每一侧至少一个相邻的片段相同。
- 这些克隆被测序后，这个集合就是一个“测序-克隆contig”。当从指纹克隆contig中选择的所有克隆都测序后，已测序的克隆contig将与指纹克隆contig相同。未测序前，一个指纹克隆contig可能包含多个序列克隆contig。
- 在对单个克隆(例如，A和B)进行测序并绘制覆盖率草图后，使用GigAssembler对数据进行分析(图6)，从初始序列contigs生成合并序列contigs，并将它们连接起来形成序列-contig-scaffold。

2nd presentation



Improvement: one thing at a time

1st presentation

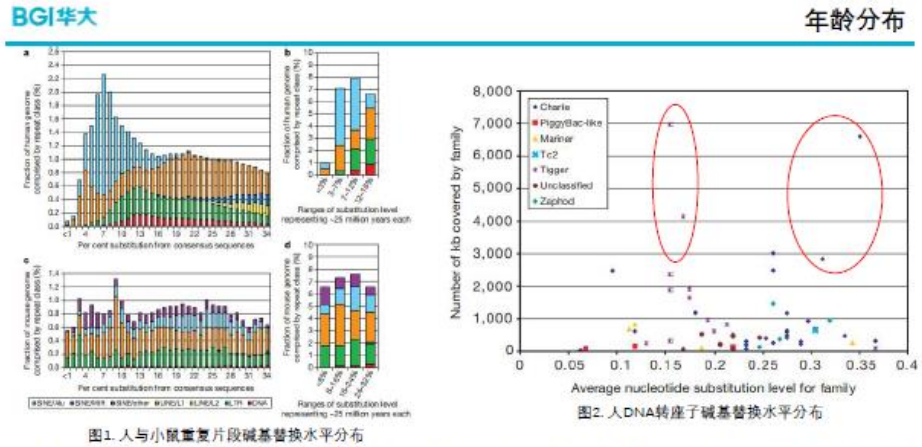
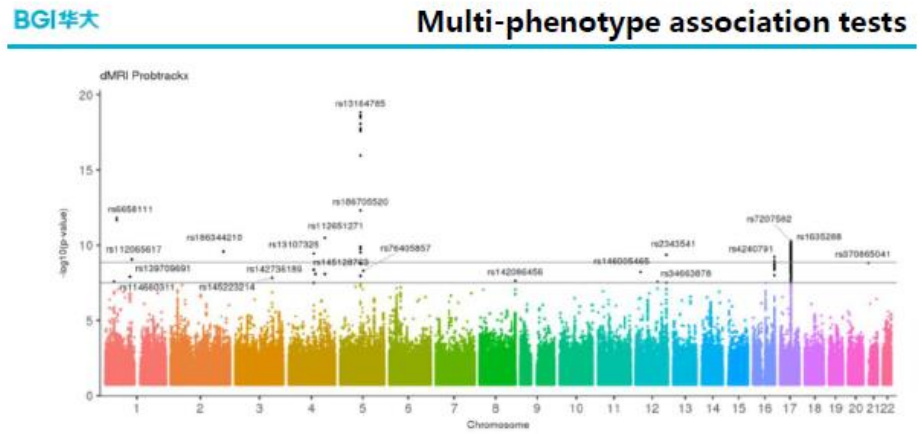


图1. 人与小鼠重复片段碱基替换水平分布

图2. 人DNA转座子碱基替换水平分布

结论：1. 从脊椎动物基因组中清除非功能序列的速度非常慢；2. LINE和SINE的寿命很长；3.DNA转座子有两个峰。由于DNA转座子可以产生大规模的染色体重排，很可能是该活动参与了物种形成事件；4. 序列草图中识别带有功能的全长LTR拷贝只有3个，可能已经快要消失；5.所有转座子的整体活性在过去5000万年的时间里显著下降

2nd presentation



23组IDPs进行多性状GWAS的GWAS曼哈顿图。

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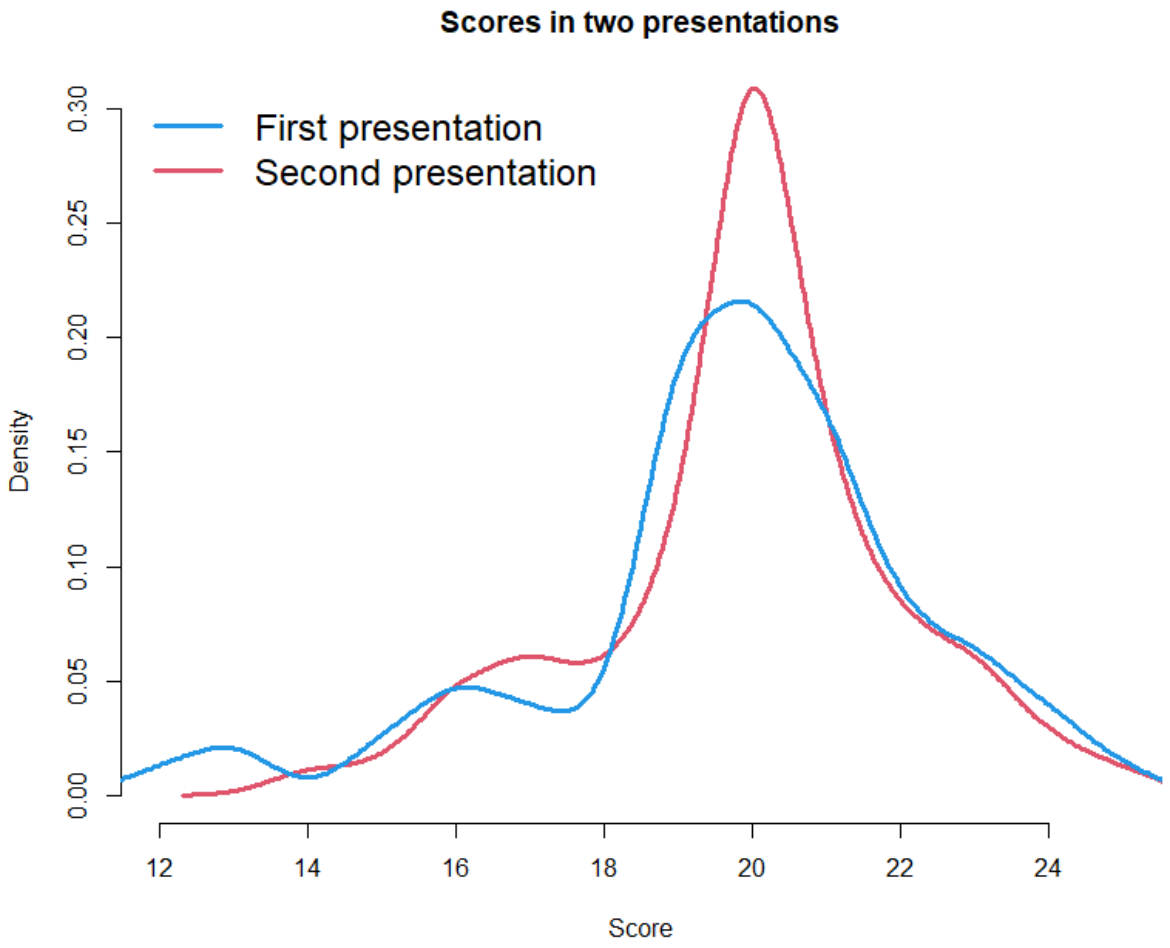
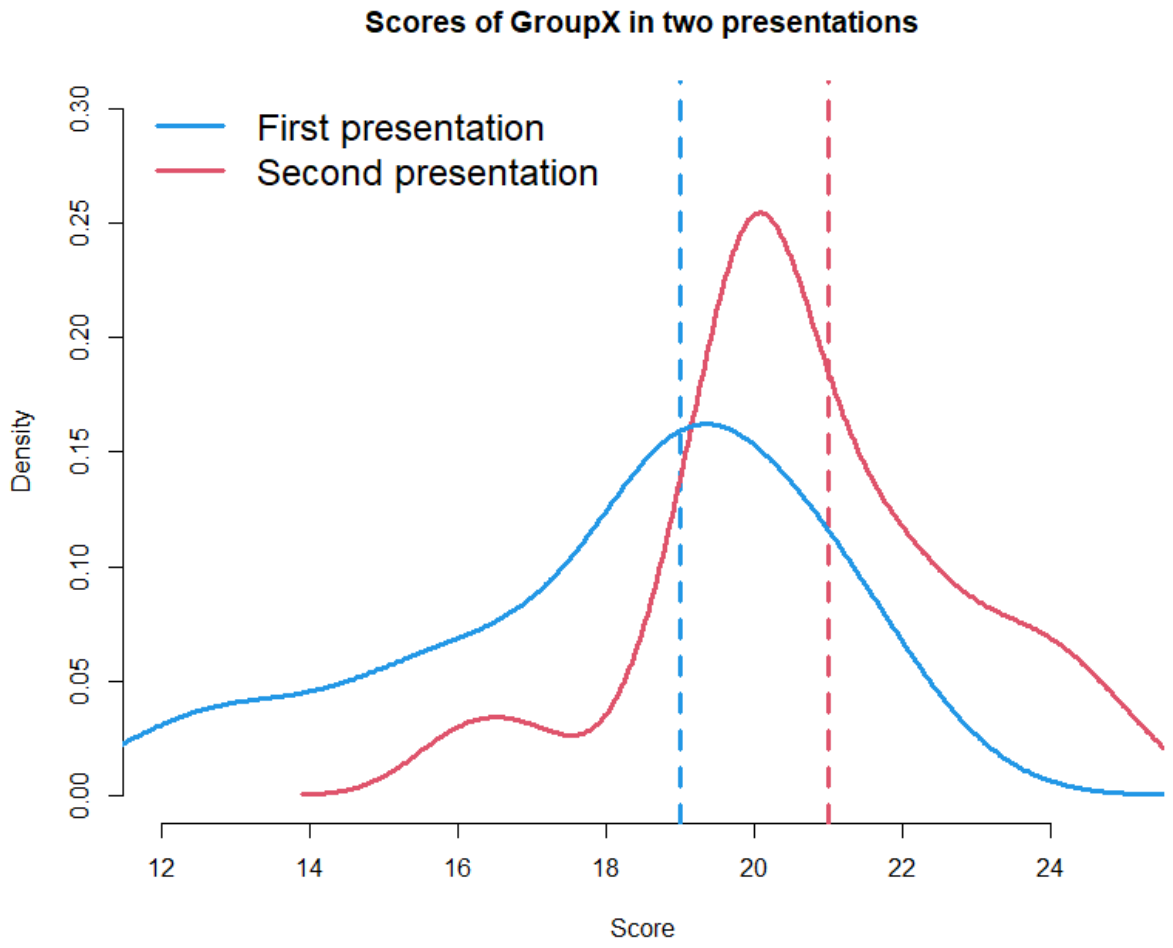
Review of the students grading





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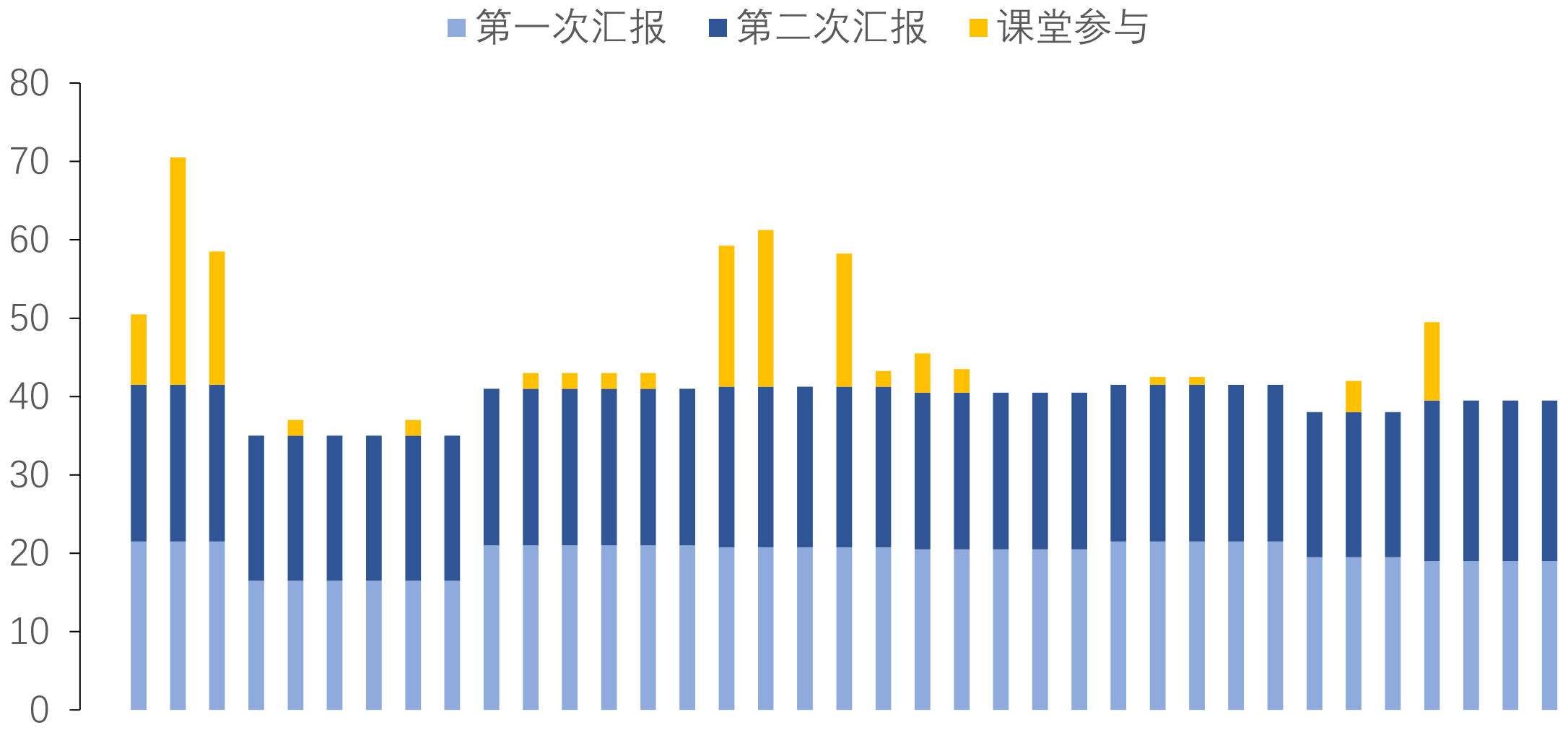
Review of the scores



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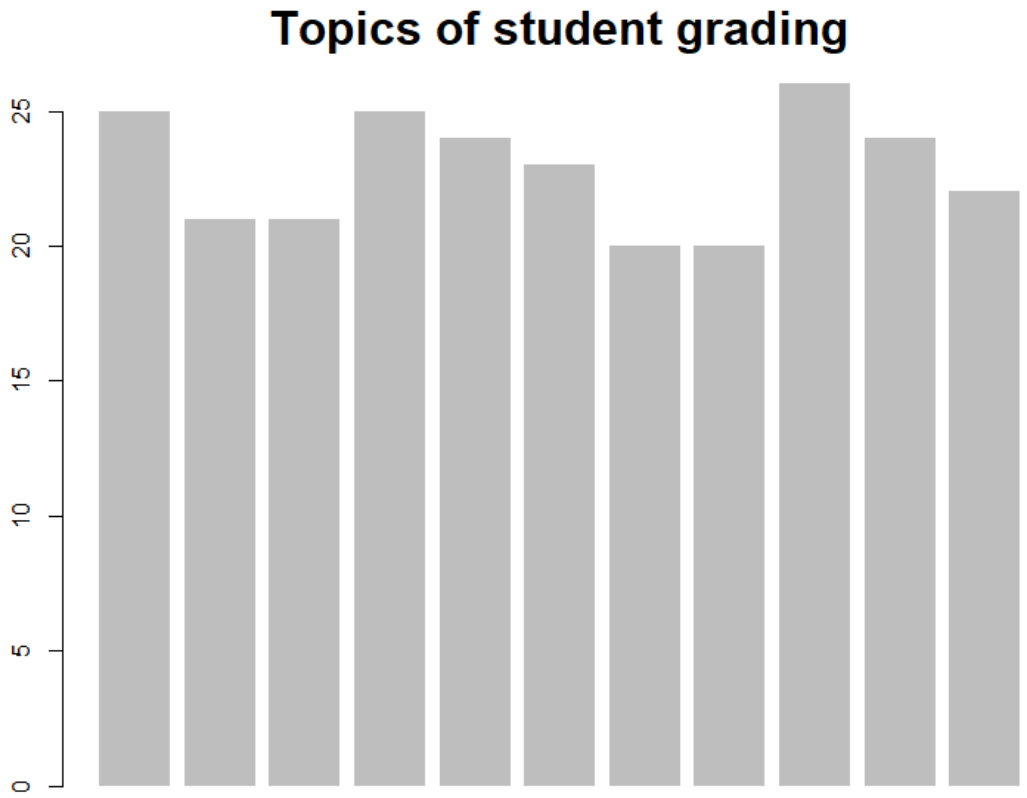
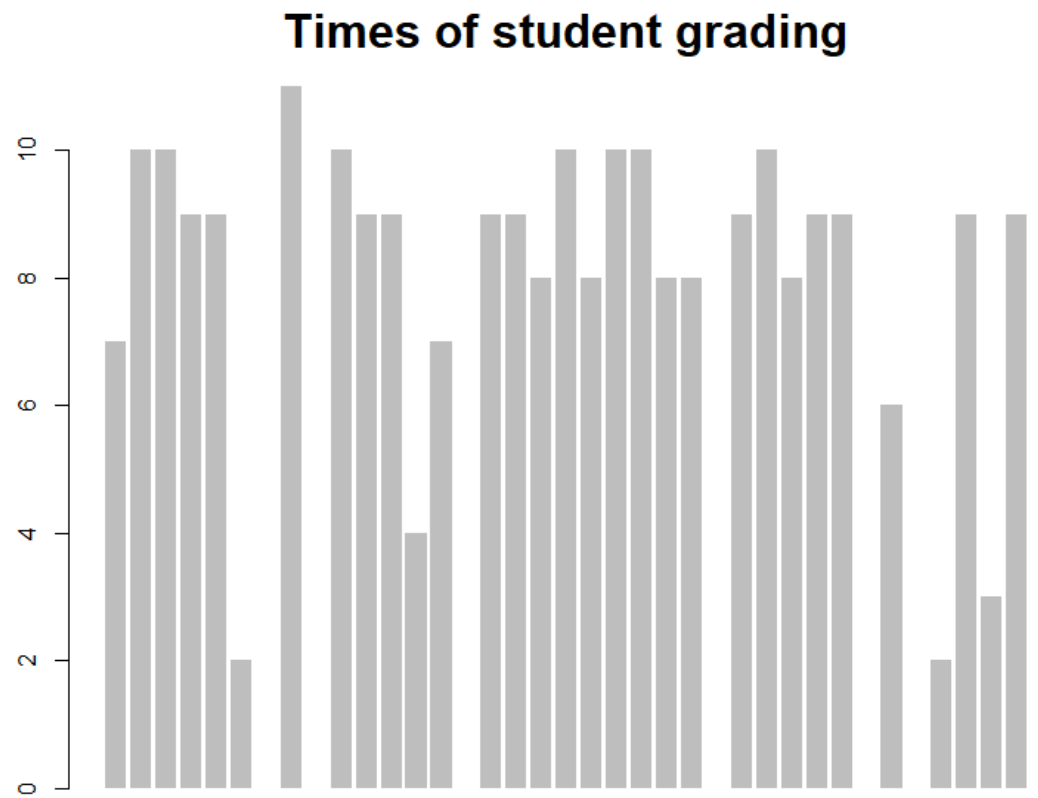
Review of the involvement





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题目

部门 姓名

2021.12.7

华大生命科学研究院
BGI · research

背景介绍

- 背景

课题设计

- 科学问题
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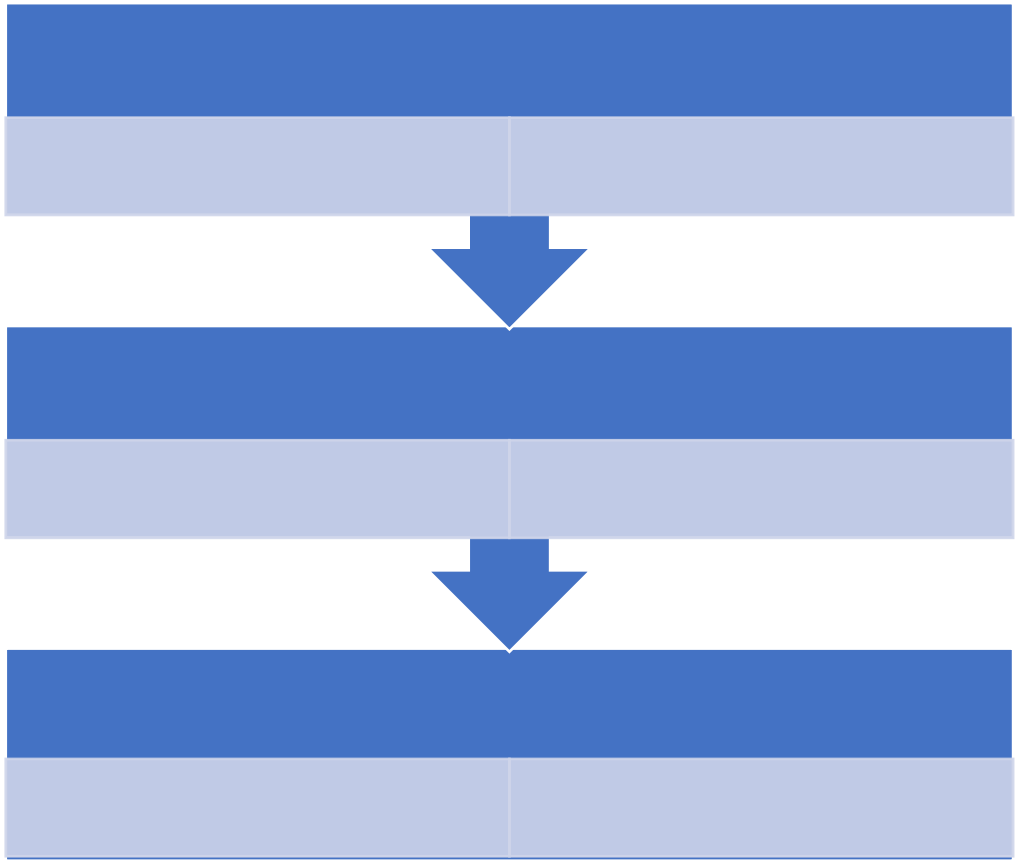
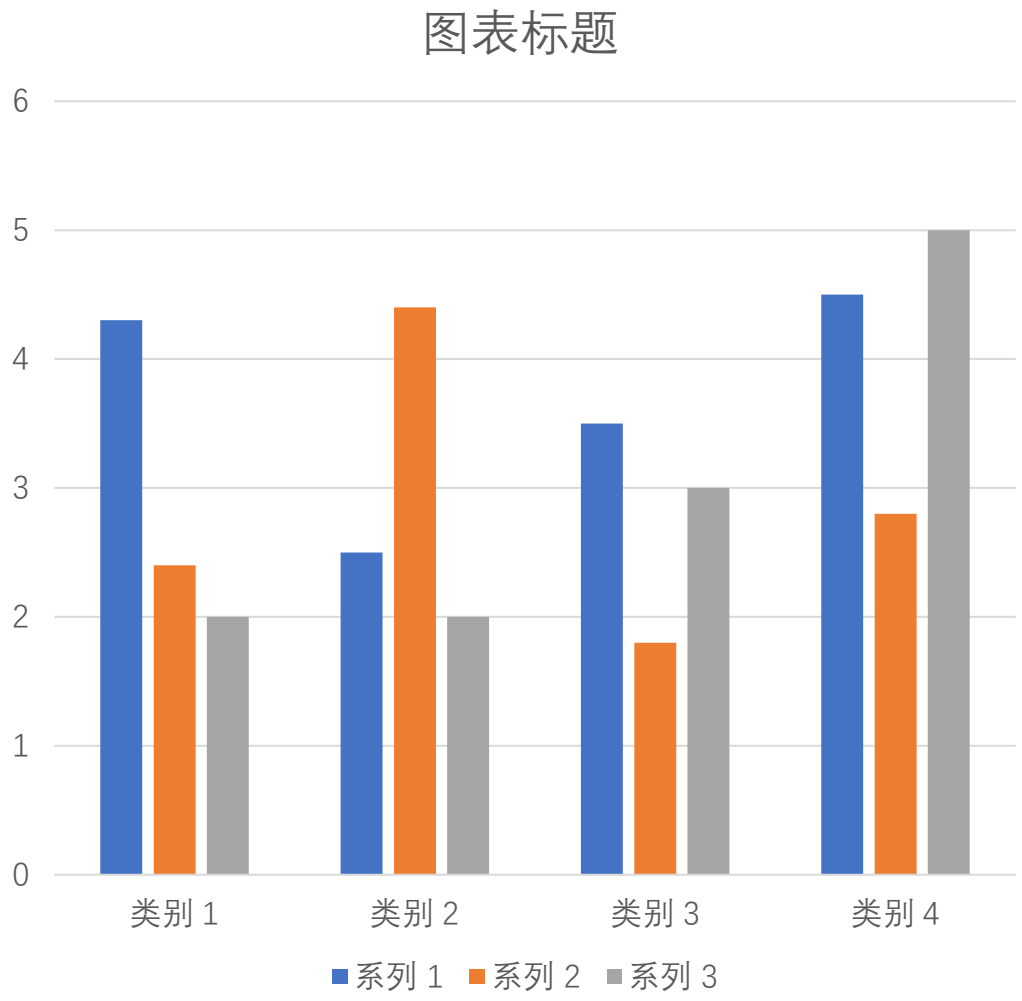
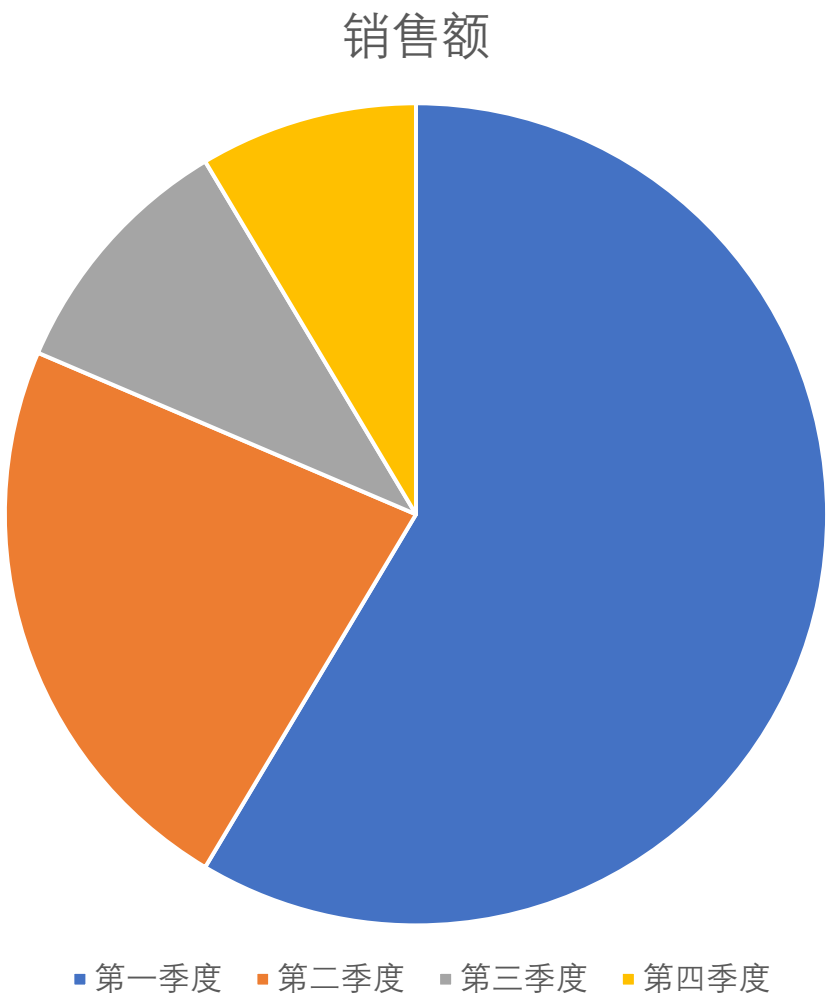
- 实验设计



结果（一句话表述）


图表标题
6
5
4
3
2
1
0
类别 1
类别 2
类别 3
类别 4
系列 1
系列 2
系列 3


销售额
第一季度
第二季度
第三季度
第四季度

结论

- 结论一结论一结论一结论一结论一结论一结论一结论一结论一结论一
- 结论二结论二结论二结论二结论二结论二结论二结论二结论二结论二
- …

- 意义意义意义意义意义意义意义意义意义意义意义意义意义意义意义

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THANKS

OMICS FOR ALL

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BGI华大 What professors say about communication

Professor of Statistics, Susan Holmes:

> **Even if you're very, very good with numbers, you also have to understand how to tell your audience what results you obtained. . . It's really important for students to realize that if they want the gift of making the discovery, they have to be the ones who can tell the story.**

Professor of Computer Sciences, Mehran Samani:

> **I've actually seen some methods of extremely powerful computational techniques which, even after they were invented, took years to catch on. Part of the reason why they took that long to catch on was because the people inventing those methods did not do a very good job explaining their methods.**

(Source: Program of Writing and Rhetoric, Stanford University)

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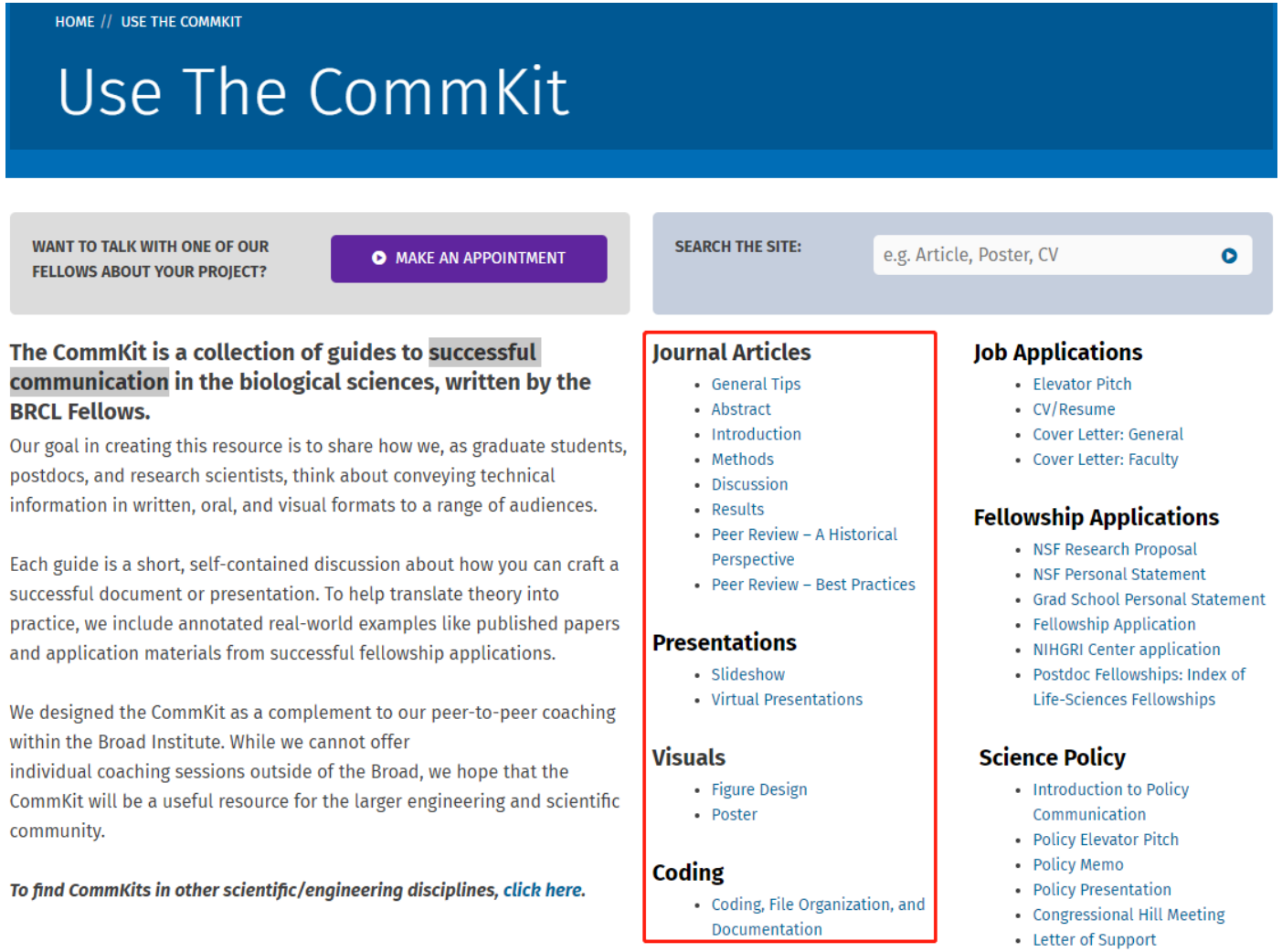
MIT CommKit



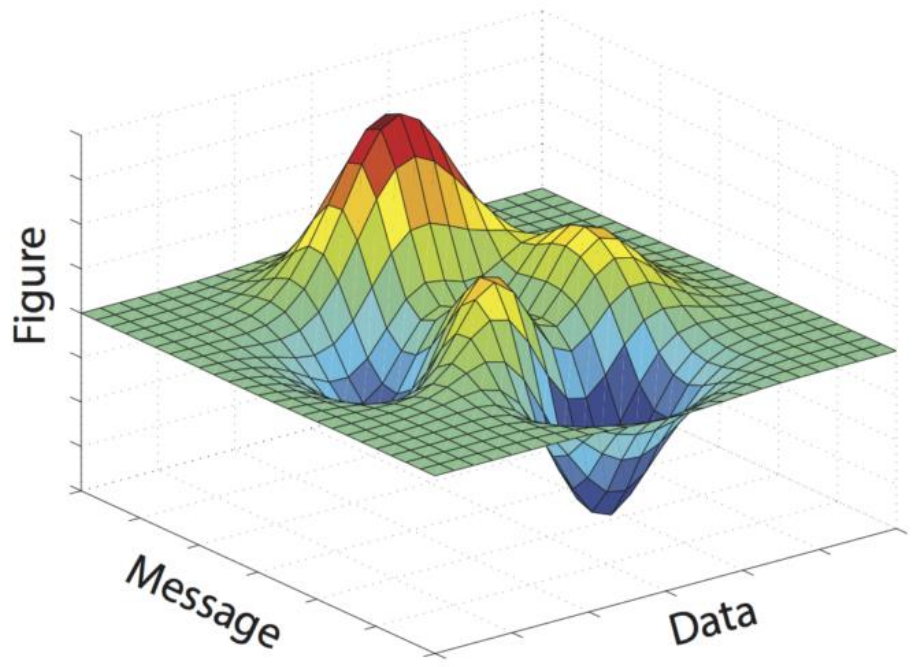
https://mitcommlab.mit.edu/broad/use-the-commkit/

MIT CommKit: figure design

Criteria for Success

1. Your figure leaves the audience with a clear, one-sentence main message
2. You provide evidence that directly supports the main message
3. Any content not related to your main message is removed from the figure

Structure Diagram



Analyze Your Visual Platform

Will you be presenting your figure in an academic paper, a poster presentation, an oral presentation? The final format dictates how your audience will interact with the figure, and how much support or explanation you will be able to provide.

Visual platform	Static or dynamic?	What information goes where?
Paper	Static	• Figure and caption should be sufficient for reader to draw a conclusion. Expert readers judge papers' credibility and impact based on figures alone. • Caption's title should state the message. • Remainder of caption should not contain any interpretation, only high-level description of what was done to obtain data in the figure.
Poster	Static	• You are present and can supplement printed information with spoken explanations. • Precede figure with title that states the message. • A caption is often unnecessary: viewers can easily glance at methods to see how data were obtained. • Larger sizing allows more thorough and direct labeling than is possible for papers. Take advantage of this to make your figure more self-explanatory.
Slides	Dynamic (can be animated)	• Slide title should state the message. • Text should be minimized. • Animations can be used to pace delivery of complex figures. • See **Slideshow Presentation** for more specific skills.

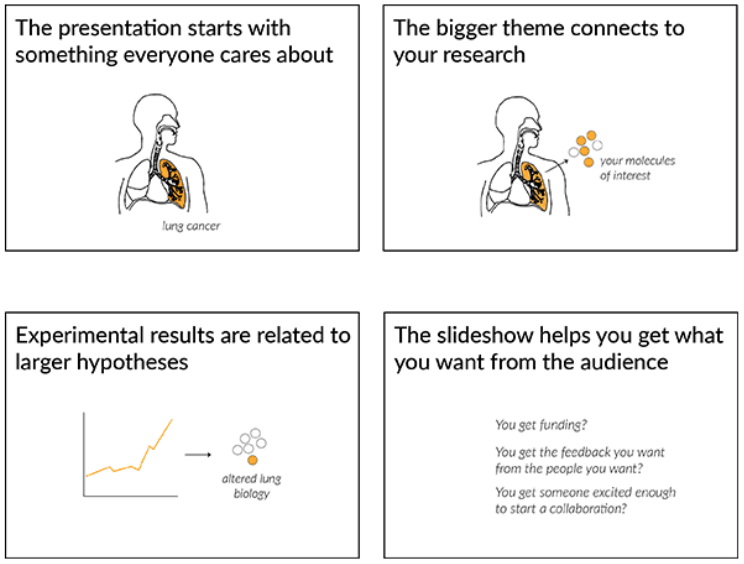
https://mitcommlab.mit.edu/broad/commkit/figure-design/

MIT CommKit: slide show

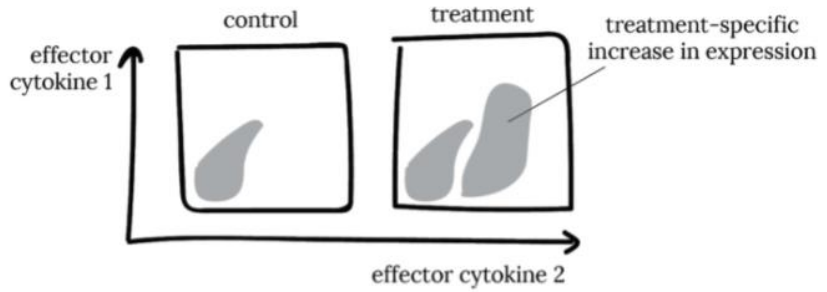
Document Map

1. What is my purpose for giving this presentation?
2. Who is my audience?
3. What are the concepts for success?
    a. Connect your work back to broader motivations and hypotheses
    b. "Introduce" your data
    c. Each slide should convey a single point
    d. Emphasize visuals over text
    e. Make each figure as simple as possible while still conveying its message
    f. Avoid jargon, textual and visual
    g. Prepare for the talking part of the talk

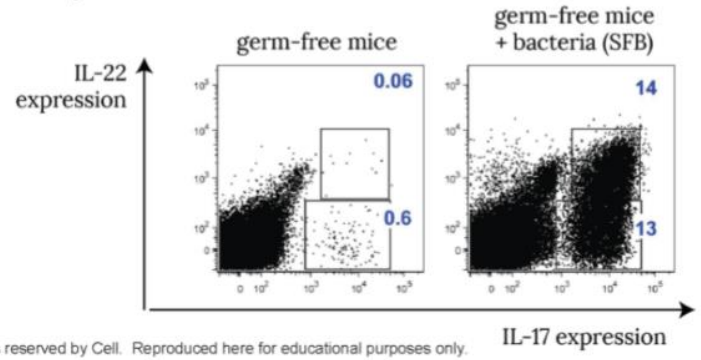
Structure Diagram



Flow cytometry can show if the experimental treatment increases the expression of an effector cytokine



Adding the bacteria of interest increases the expression of effector cytokine IL-17



Try visually explaining unfamiliar data. For an audience unfamiliar with reading FACS plots, an imaginary immunologist first shows a slide explaining how the biological signal would appear in a FACS plot (*top*) before showing the slide with the actual data (*below*). [Adapted from Ivanov *et al.*, *Cell* (2009) doi:10.1016/j.cell.2009.09.033]

https://mitcommlab.mit.edu/broad/commkit/slideshow/

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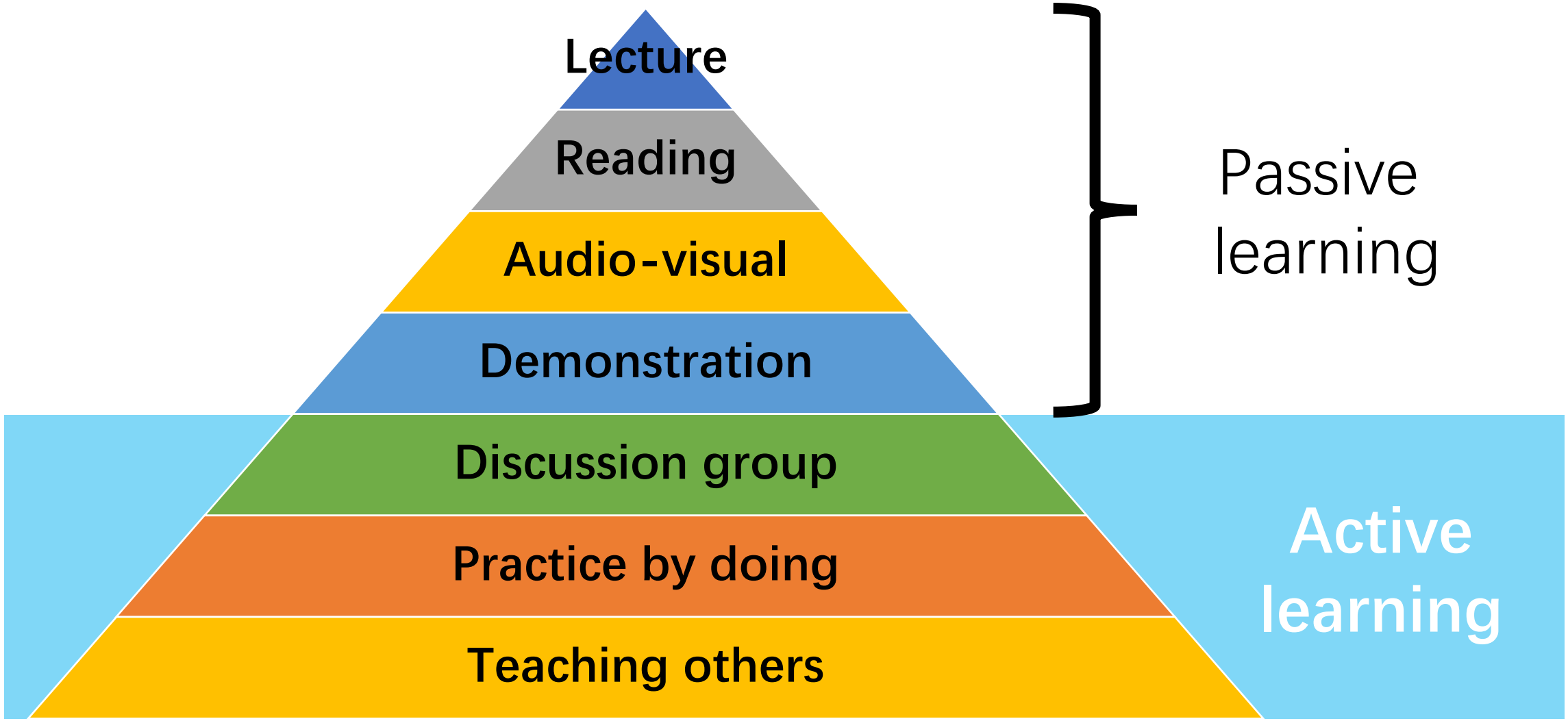
Learning Pyramid



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What have you learned about research

- 人类基因组计划有哪些意义?
- 人类基因组文献阅读，对你的学习和工作有什么帮助?

- 作为研究生，应当做好哪些事情?
- 一个合格的硕士生/博士生应当具备何种能力?

- 你对生命科学及生物产业的前景看法如何?
- 你对未来的职业生涯有什么问题?

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What have your learned about an paper

- 摘要包括哪些方面？什么样的摘要是一篇好摘要？
- 前言包括哪些内容？前言第一段如何写（如何开头）？基本结构是什么？前言与讨论有什么区别？如何引出自己要研究的科学问题？科学问题和科学假说一般在哪一段提出来？
- 材料与方法包括哪些内容？如果有多个参数测定，如何安排描述顺序？数据统计分析方法如何描述？
- 结果的顺序如何安排？按照什么逻辑关系？什么结果用图表示，什么结果用表表示？“图表自明”是什么含义？
- 讨论包括哪些内容？基本结构是什么？ 讨论的第一段和最后一段，都是什么内容？ 讨论需要加小标题吗？段落之间有什么逻辑关系？论文小结与摘要是什么关系？ 结果与结论有什么区别？ 如何提高理论层次？ 如何说明研究结果或结论的重要性？潜在的应用价值或理论（学说）的广普性？

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What have your learned about an paper

- 论文的题目有哪些类型？如何给论文起一个好题目？什么样的题目受欢迎？应该避免什么样的题目？请对你喜欢的论文题目和不喜欢的题目各举例说明（可以列5-10例）
- 学术论文署名，有哪些基本原则？作者排序和单位排序。一般根据什么进行排序？一篇文章有多个共同第一作者是怎么回事？有多个共同通讯作者是怎么回事？
- 致谢包含哪些方面？哪些人或单位需要致谢？哪些人可以致谢但不能作为作者？哪些人应该作为作者而不能只是致谢？一篇文章应该挂几个基金号码？
- 文章后的参考文献一般有哪些格式？（请关注作者的姓和名、年代、题目、期刊名称、卷期和页码等）。 文章中的参考文献有几种引用方式？ 文章中的文献引用，有多篇文献引用的时候，如何排序？