



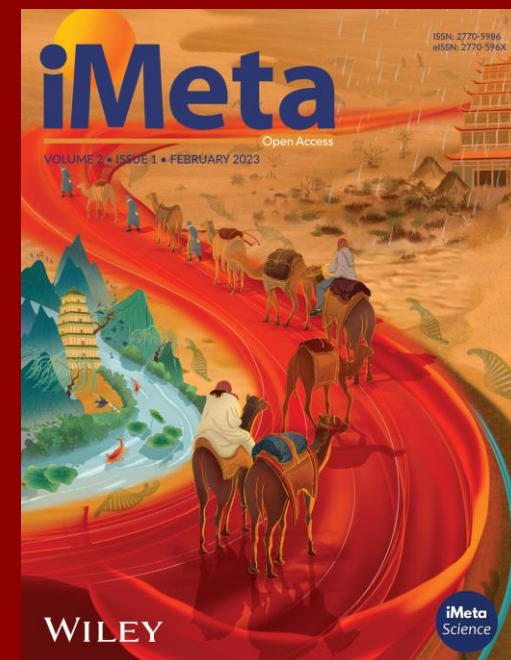
EVenn最全可视化集合关系

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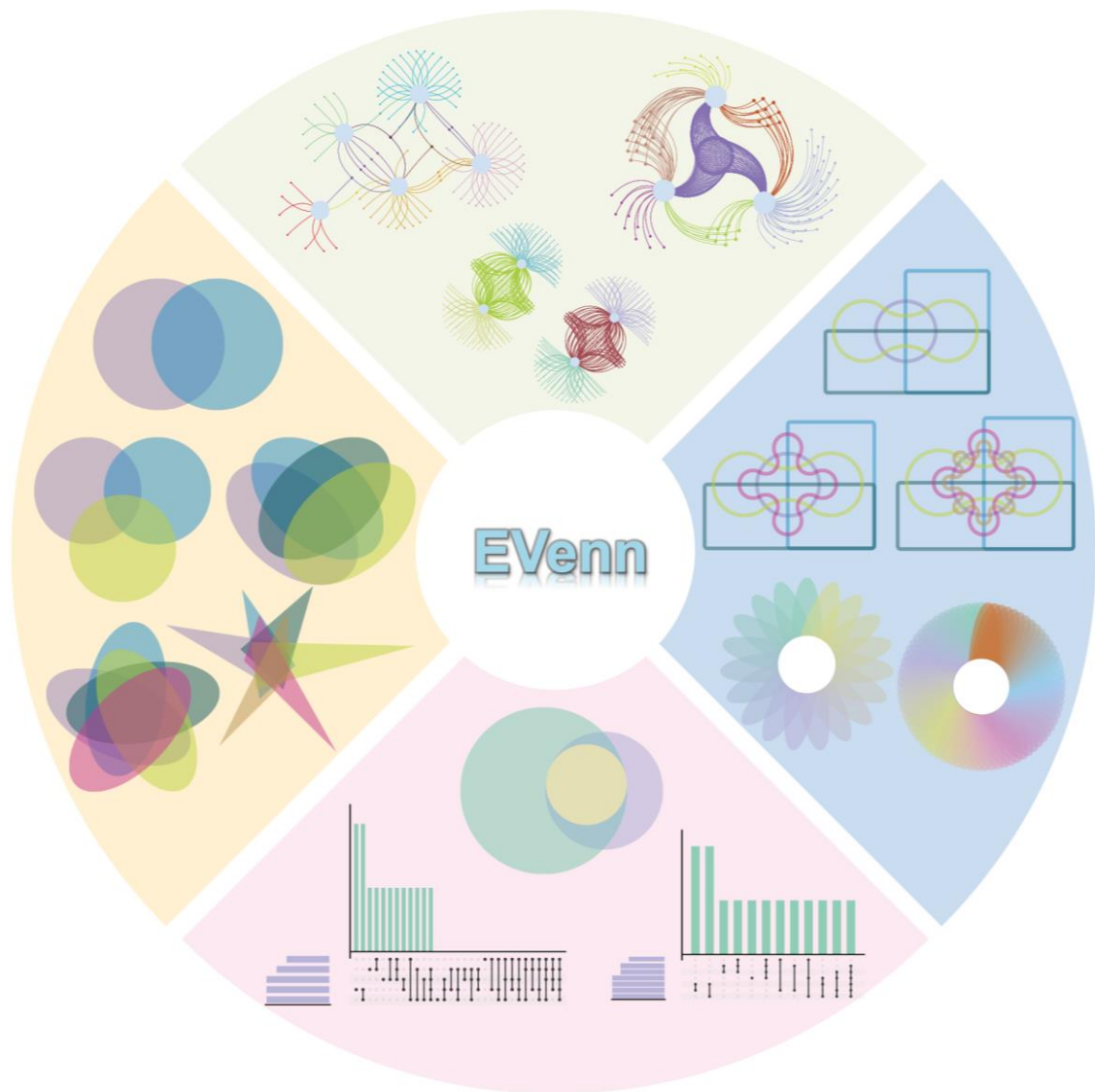


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亮点

- ① 全面的韦恩功能
- ② 高效的数据探索
- ③ 用户友好的界面



A

Elements	Set
ele1	Set1
ele2	Set1
ele3	Set2
ele3	Set1
ele4	Set2
ele1	Set3
ele5	Set3
ele2	Set4

Example 1

B

Genes	Groups
Sox2	Control
Pou5f1	Control
Nanog	Knockout
P53	Control
Sox2	Knockout
Myc	Knockin
Kras	Knockout
Lin28	Knockdown

Sets with genes

C

OTUs	Positions
ASV_1	Root
ASV_2	Root
ASV_3	Leaf
ASV_4	Root
ASV_1	Leaf
ASV_5	Stem
ASV_6	Stem
ASV_7	Soil

Sets with OTUs

D

Genes	Pathways
JUN	P53 pathway
MEST	EMT pathway
JUN	EMT pathway
KLF9	TNFA pathway
ACTA2	EMT pathway
MAFF	Hypoxia
UGP2	Hypoxia
APBB2	UV response

Sets with ontologies

E

Group1 Group2

OTU1	OTU1
OTU2	OTU12
OTU3	OTU13
.	.
.	.
.	.

Input items for each set

F

Set A Set B

	Intersection	Count
A		15
B		35
C		0
A&B		3
A&C		0
B&C		0
A&B&C		3

A specific:
 B specific:
 A ∩ B:

Input numbers for each intersection

G

Ele	A	B	C	D	E
Ele1	1	1	0	0	1
Ele2	1	0	1	1	0
Ele3	0	1	0	0	0
Ele4	1	1	0	0	1
Ele5	0	0	1	0	0
Ele6	0	0	0	1	1
Ele7	1	1	1	1	1

Binary matrix



Evenn代表性结果示意图

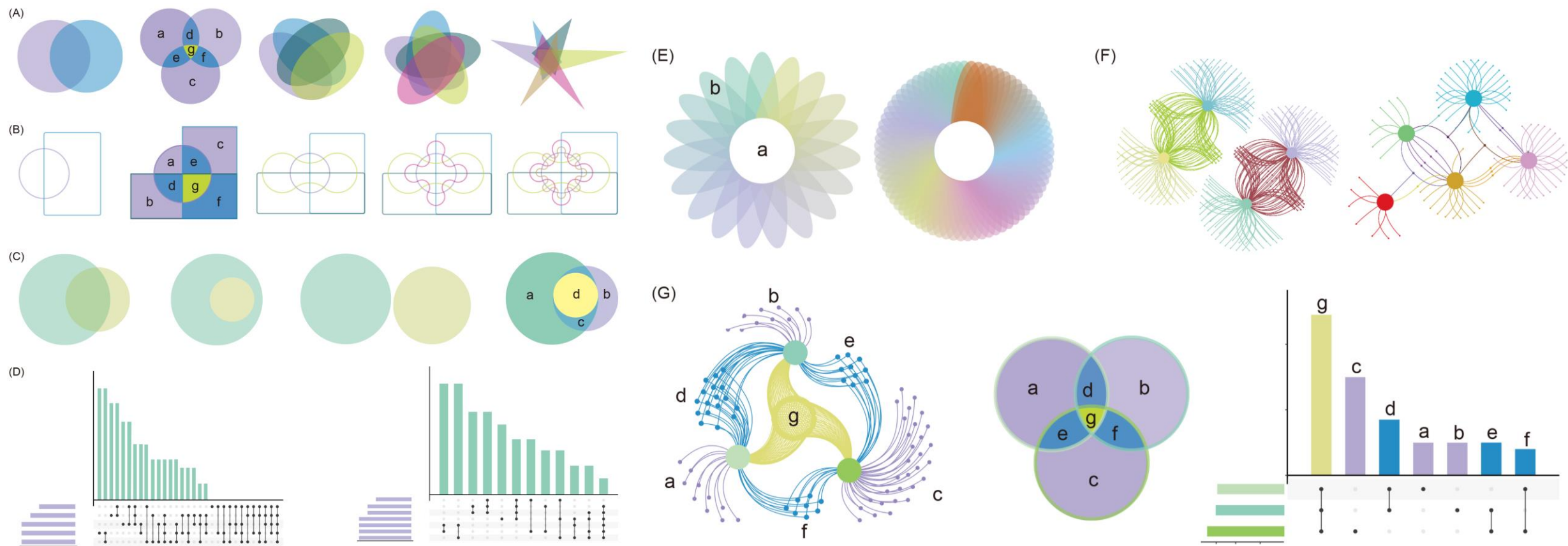


图 1. EVenn代表性结果示意图。

(A) 2至6组交互式标准韦恩图； (B) 2至6组交互式爱德华图； (C) 2至3组欧拉图；
(D) 5组显示空交集和7组不显示空交集的UpSet图； (E) 19组和70组花瓣图；
(F) 4至5组韦恩网络图； (G) 韦恩图、UpSet图和韦恩网络图三者之间的关系图。



EVENN数据中心的简化数据输入

The screenshot shows the 'Data Center' section of the EENN website. The navigation bar includes 'Home', 'Data Center', and various analysis tools. The main content area is titled 'Upload data' and features a large cloud icon with an upward arrow. Below the icon, text reads: 'Drag the file here or click to upload. Only support xls | xlsx | csv | txt file with a size no more than 1 Mb could be uploaded. Rember to click 'Submit' to finish data uploading or data revising!'. A sidebar on the left contains five numbered steps: 1. Upload data (highlighted), 2. Input the name for your data, 3. Preview and edit (if necessary) the uploaded data, 4. Click Submit (highlighted), and 5. Use your uploaded data.

图 2. 轻松上传文件的流程

The screenshot shows the 'Data Center' section of the EENN website, focusing on the data paste workflow. The navigation bar is the same as in Figure 2. The main content area has a cloud icon and text: 'Drag the file here or click to upload. Only support xls | xlsx | csv | txt file with a size no more than 1 Mb could be uploaded. Rember to click 'Submit' to finish data uploading or data revising!'. A sidebar on the left contains four numbered steps: 1. Input the name for your data, 2. Paste your data matrix directly in this text area, 3. Click Submit (highlighted), and 4. Use your uploaded data. Below the sidebar, a list of files is shown: DE_gene_file.txt, DE_gene_file1.txt, DE_gene_file2.txt, DE_gene_file3.txt, and DE_gene_file4.txt. A 'Remove data' button with a red '5' is positioned to the right of the list.

图 3. 高效粘贴数据的流程



案例数据多种韦恩图的生成步骤

Home Data Center Interactive Venn diagram Euler diagram UpSet Flower plot Interactive Flower plot Venn network Venn estimate Venn calculator Help

Click to export image and lists

- Download PNG image
- Download SVG image
- Download CSV lists

Venn global configuration (Click to fold/unfold) Click to show more parameters

- Input matrix in two-column mode.
- The first column containing elements by rows and the second column represents the set it belongs to.
- The column separator should be one TAB.
- One could choose which set to show in the Venn diagram.
- Hold down and drag to modify displaying orders of sets.

Use your uploaded data

Metabolite Tissue Paste your data here

mws0217	FS1
pme2292	FS1
pme1987	FS1
Lmgn000188	FS1
MWS1787	FS1
MWS2040	FS1
MWSmce461	FS1
mws4052	FS1
pme1841	FS1
MWSmce585	FS1
nme3033	FS1

FS1 Select sets FS2 FS3 FS4 FS5 Please select the column

Drag to change set orders

Set colors

Click on a venn diagram figure to display the linked elements:

Common elements in FS1 FS2 FS3 FS4 FS5: Access specific intersection data

Size of each list

Number of elements: specific (1) or shared by 2, 3, ... lists

Generate the Venn diagram

Home Data Center Interactive Venn diagram Euler diagram UpSet Flower plot Interactive Flower plot Venn network Venn estimate Venn calculator Help

Matrix (two-column mode matrix) Use your uploaded data

Target_gene	Biological_process_description	Paste data
IMPTAPA2N18434_1	monocarboxylic_acid_biosynthetic_process	
IMPTAPA2N9430_1	monocarboxylic_acid_biosynthetic_process	
IMPTAPA2N50854_1	monocarboxylic_acid_biosynthetic_process	
IMPTAPA2N52279_1	monocarboxylic_acid_biosynthetic_process	
IMPTAPA2N34454_1	monocarboxylic_acid_biosynthetic_process	
IMPTAPA2N12074_1	monocarboxylic_acid_biosynthetic_process	
IMPTAPA2N17543_1	monocarboxylic_acid_biosynthetic_process	
IMPTAPA2N18486_1	monocarboxylic_acid_biosynthetic_process	
IMPTAPA2N23106_1	monocarboxylic_acid_biosynthetic_process	
IMPTAPA2N37477_1	monocarboxylic_acid_biosynthetic_process	

Parameters

Set colors for each set: Select color parameter

Showing mode: Select mode parameter

- Show all elements
- Show only common elements and specific elements like flower

Submit Click Submit

nodes

font: color: size: face: arial background: strokeWidth: strokeColor:

edges

smooth: enabled: Select diagonalCross type: diagonalCross forceDirection: roundness: 0.5

layout physics

barnesHut: gravitationalConstant: -2000 centralGravity: 0.3 springLength: 95 springConstant: 0.04 damping: 0.09 avoidOverlap: 0 maxVelocity: 50 minVelocity: Select barnesHut solver: barnesHut timestep: 0.3

Tools menu

- Click left toolbar
- Download SVG
- Legend
- Edit node
- Edit edge
- Preferred layout

Click Preferred layout

图 4. 案例数据多种韦恩图的生成步骤



多组学数据分析案例展示

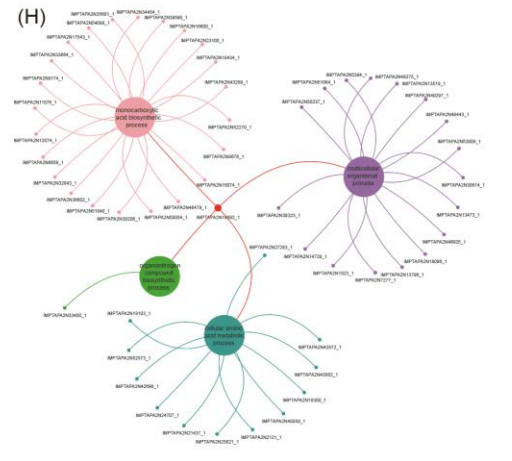
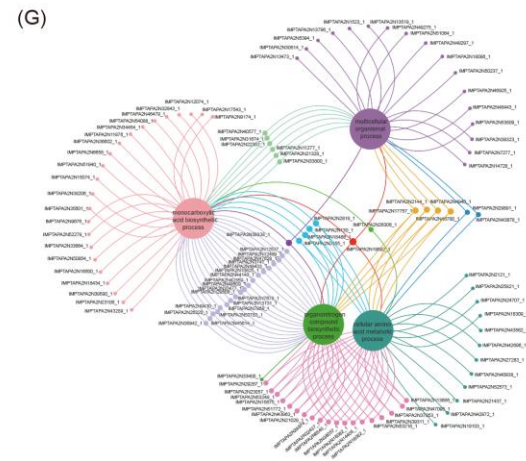
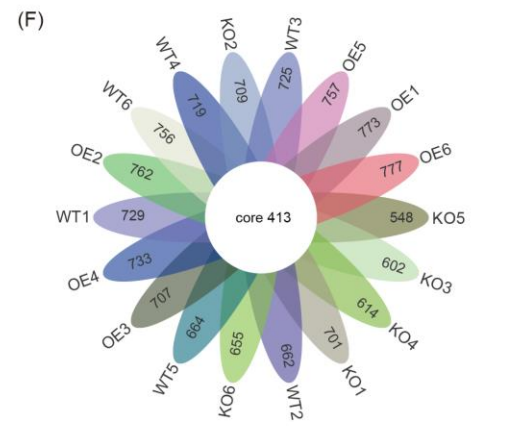
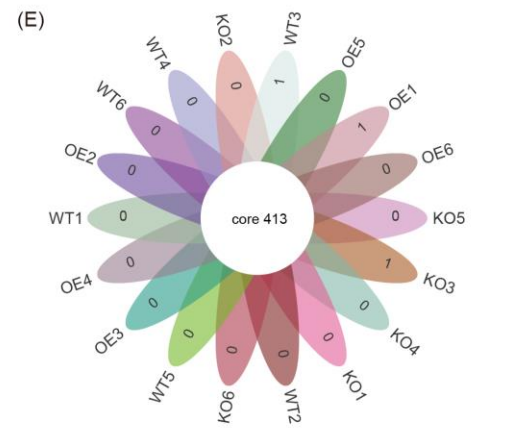
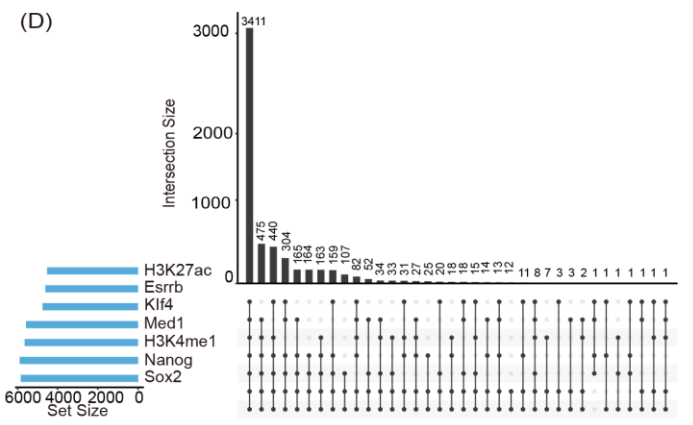
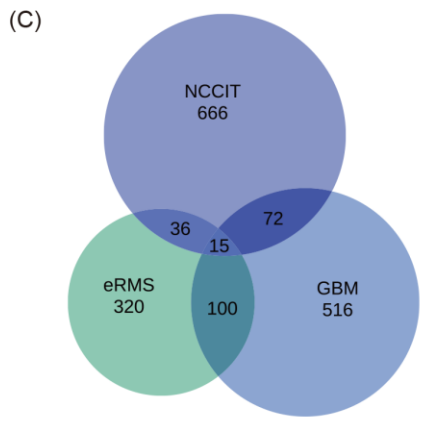
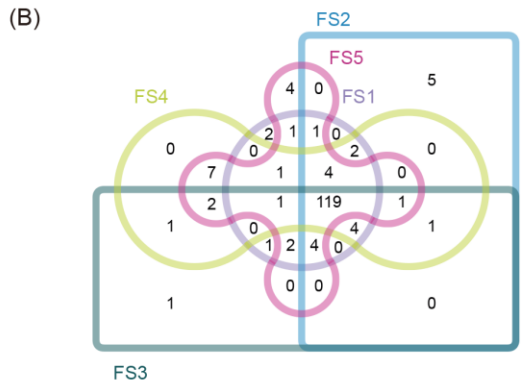
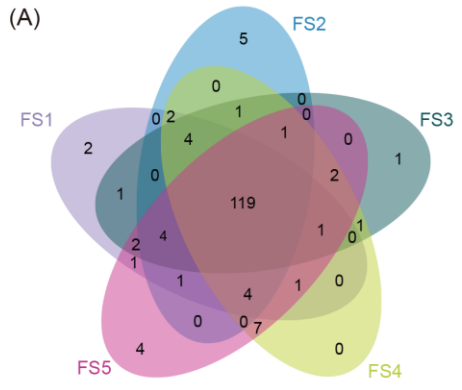


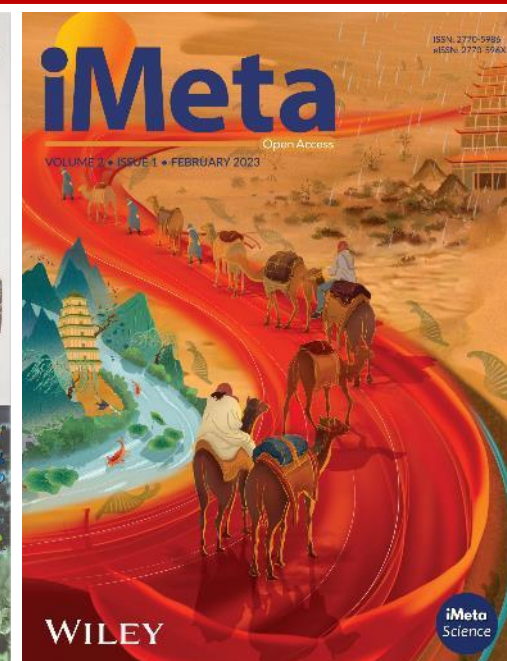
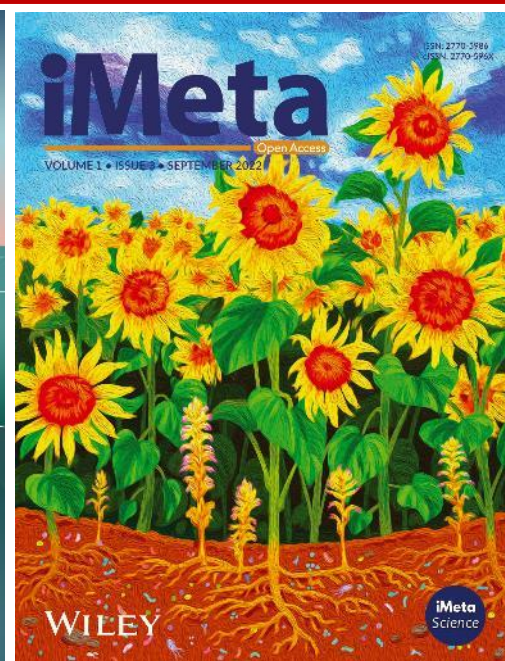
图 5. 案例展示

(A) 茯苓5个部位差异代谢物的交互式韦恩图；(B) 茯苓5个部位差异代谢物的交互式爱德华图；(C) 抗癌药物治疗后三种细胞差异表达基因的欧拉图；(D) 7个转录调控因子及其靶向基因ChIP-seq的UpSet图；(E) 交互式花瓣图展示18个微生物组共有和特有OTUs数量；(F) 交互式花瓣图展示18个微生物组共有及减去共有后的OTUs数量；(G) 韦恩网络图展示穿心莲基因本体富集分析结果；(H) 韦恩网络图展示穿心莲四个生物过程富集的共有和特有基因。



总结

- ❑ 这篇文章介绍了一个用户友好的EVENN平台，包含多种韦恩图工具，用于多组学数据分析。
- ❑ 目前，EVENN的数据中心使用标准化的两列矩阵格式来简化输入过程，允许研究人员轻松上传和分析数据，加速了从数据准备到深入分析的过渡。
- ❑ 最后，我们通过描述不同组学的案例展示了EVENN的多功能性，强调了其在多数据分析中的实用性。EVENN平台为从事多组学分析的研究人员提供了宝贵的资源，促进了新的见解。
- ❑ 网址: <http://ehbio.com/test/venn/>



“**iMeta**”由威立、肠菌分会和华人科学家出版的开放获取期刊，主编由中科院微生物所刘双江和荷兰格罗宁根大学傅静远教授共同担任。目的是发表原创研究、方法和综述以促进宏基因组学、微生物组和生物信息学发展。目标是发表前10%(IF>20)的高影响力论文。期刊特色包括视频投稿、可重复分析、图片打磨、青年编委、中英双语、50万用户的社交媒体宣传等。2022年2月发行，相继被**ESCI**、**Google Scholar**、**DOAJ**、**Scopus**等数据库收录，发文161篇，被引2316次([Dimension](#), 2024/2/19)!



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