

imOmics & Zebra Fish

动态分离离子组学与斑马鱼研究

许越

2019. 1. 22

NMT



‘非损伤微测技术’简称

是一种活体生理功能检测技术

	DNA测序仪	非损伤微测系统
检测对象	脱氧核糖核酸	离子分子流速
揭示现象	遗传信息	生理功能
组学	Genomics 基因组学	imOmics 动态分离离子组学



以离子分子流速为载体，研究活体生物
与外界环境进行信息交换的过程。



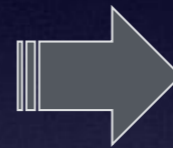
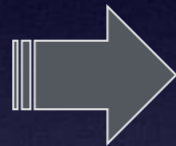
以离子分子流速为载体，研究活体生物与外界环境进行信息交换的过程。

Ca ²⁺	细胞凋亡（出） / 受精过程（进） ...
O ₂	光合作用（出） / 能量代谢（进） ...
.....

技术和学术突破



传统 NMT



imOmics[®]
动态分离离子组学

学术和技术突破 new Developments

传统 NMT \Rightarrow nNMT \Rightarrow

n { 分子离子传感器种类
及多分离子同时检测

n = 1, 2, 3, 4, 5... n

传感器种类
H ⁺
Ca ²⁺
K ⁺
Na ⁺
Cl ⁻
NH ₄ ⁺ 、NO ₃ ⁻
Mg ²⁺
Cd ²⁺
O ₂
H ₂ O ₂
IAA
Pb ²⁺ , Cu ²⁺

学术和技术突破

new Developments



人体乳腺肿瘤组织 O_2/H^+ 同时检测

[点击观看视频](#)

学术和技术突破

new Developments



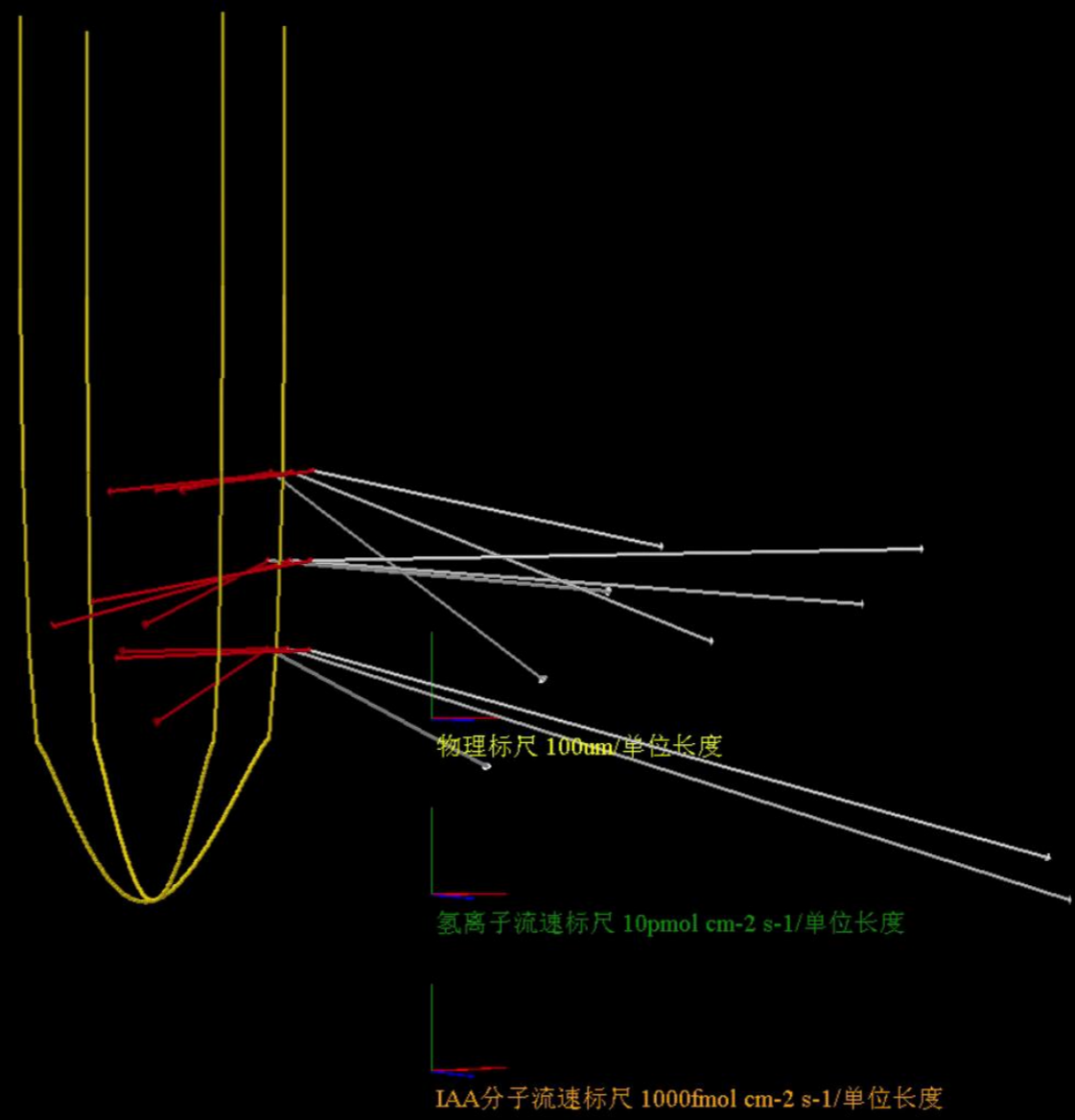
世界首个商业化IAA传感器



学术和技术突破

new Developments

植物根 IAA/H⁺同时检测



学术和技术突破

大数据软件技术

流速云® IF100

The screenshot displays the 流速云 (FlowCloud) web interface. At the top, there are two text entries: "2019.1.7 明天全体人员一起开会, 讨论下一阶段的工作安排。....." and "#44 2019-01-07 14:49:33 创建者:赵 老师". Below these is a navigation bar with "相关文件" (Related Files), "搜索文件" (Search Files), and "上传文件" (Upload Files). The main content area shows a list of files with columns for ID, date, time, uploader, and original filename. Each file entry includes icons for download, share, and delete.

ID	Date	Time	上传者	原文件名
#109	2018-12-26	14:45:41	赵 老师	3.1.csv
#106	2018-12-26	13:28:19	赵 老师	3.1.csv
#100	2018-12-26	10:40:53	赵 老师	2.2.csv
#91	2018-12-20	10:31:57	赵 老师	2.1.csv
#88	2018-12-18	10:30:10	赵 老师	2.2.csv

[点击观看流速云教程视频](#)

NMT: Science推荐产品

学术和技术突破

new Discovery

传统 NMT



nNMT



imOmics®
动态分离离子组学

臺北醫學大學
TAIPEI MEDICAL UNIVERSITY

誠樸 · 開懷 · 卓越 · 創新

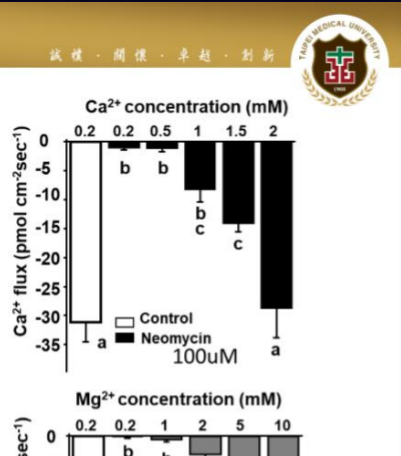
Addition of Ca²⁺ neutralized the inhibition of neomycin
高鈣中和了新黴素對毛細胞機械性通道的抑制

Ca²⁺ Ca²⁺ Ca²⁺

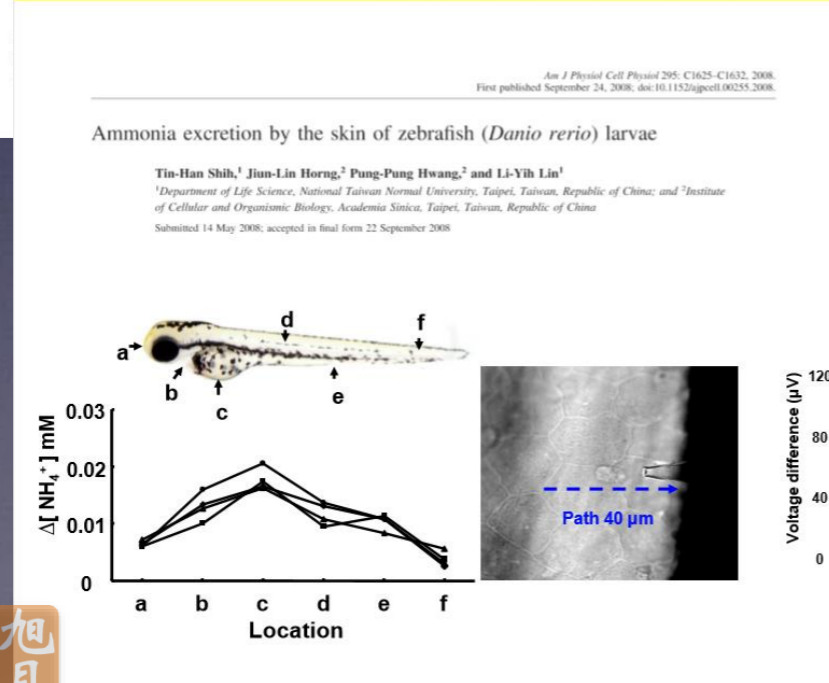
neomycin

MET channel

(Lin LY, et al. AJP 2013)



斑馬魚排氨細胞的發現



推翻了膜片钳技术的错误结论

Contents lists available at SciVerse ScienceDirect

Biochemical Pharmacology

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journal homepage: www.elsevier.com/locate/biochempharm

Biochemical Pharmacology

Uncoupling of K⁺ and Cl⁻ transport across the cell membrane in the process of regulatory volume decrease

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^c Department of Physiology, Medical College, Jinan University, Guangzhou 510632, China
^d College of Pharmacy, Jinan University, Guangzhou 510632, China
^e Guangdong Key Laboratory for Bioactive Drugs Research and, Guangdong Pharmaceutical

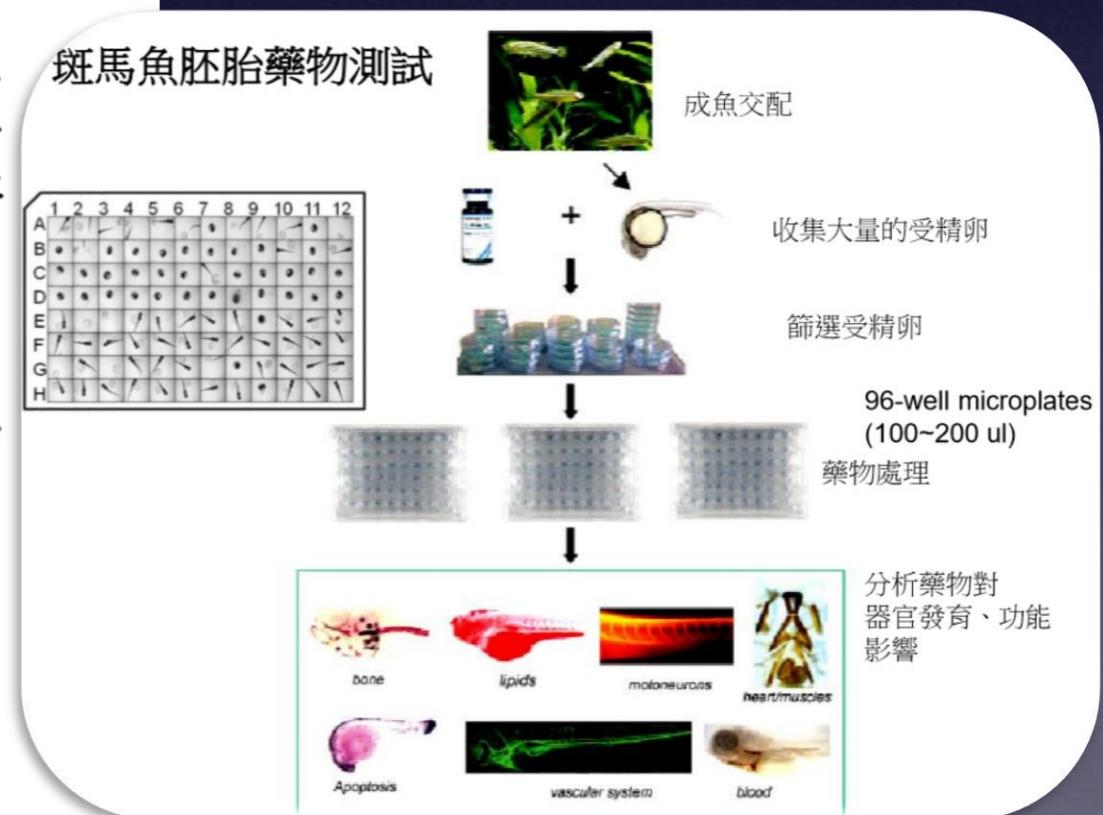


imOmics & Zebra Fish

动态分离离子组学与斑马鱼研究

總結

1. 斑馬魚胚胎是很好研究生理、藥理、毒理的模式動物。
2. 非損傷微側系統能夠有效率且精確分析斑馬魚胚胎的生理功能，以及反映出藥物、毒物所產生的影響。
3. 非損傷微側系統在斑馬魚研究上的應用很大的仍有發展空間。



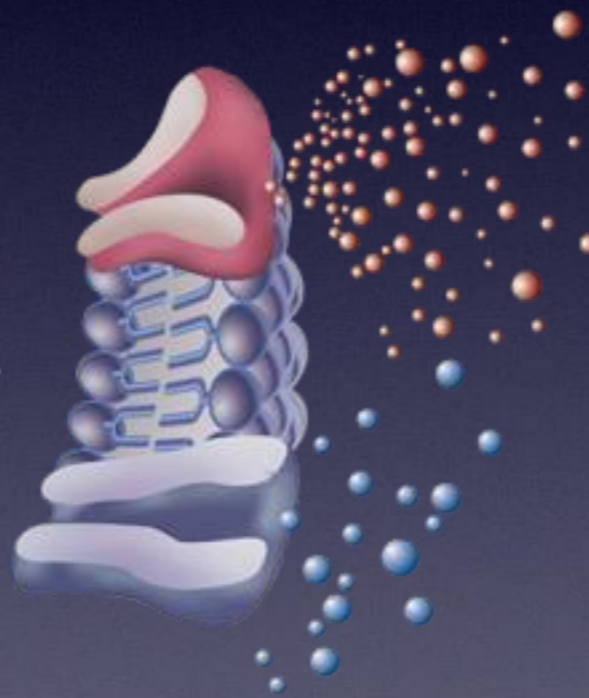
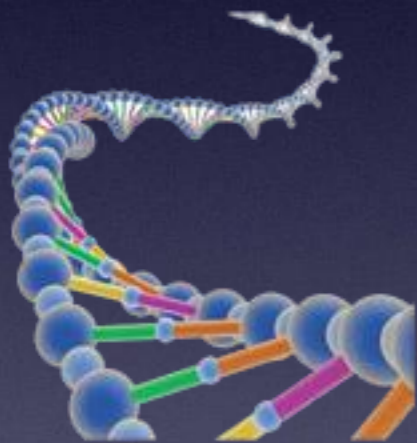
抢占未来生命科学制高点



genOmics

proteOmics

imOmics



技术突破是学术创新的基础

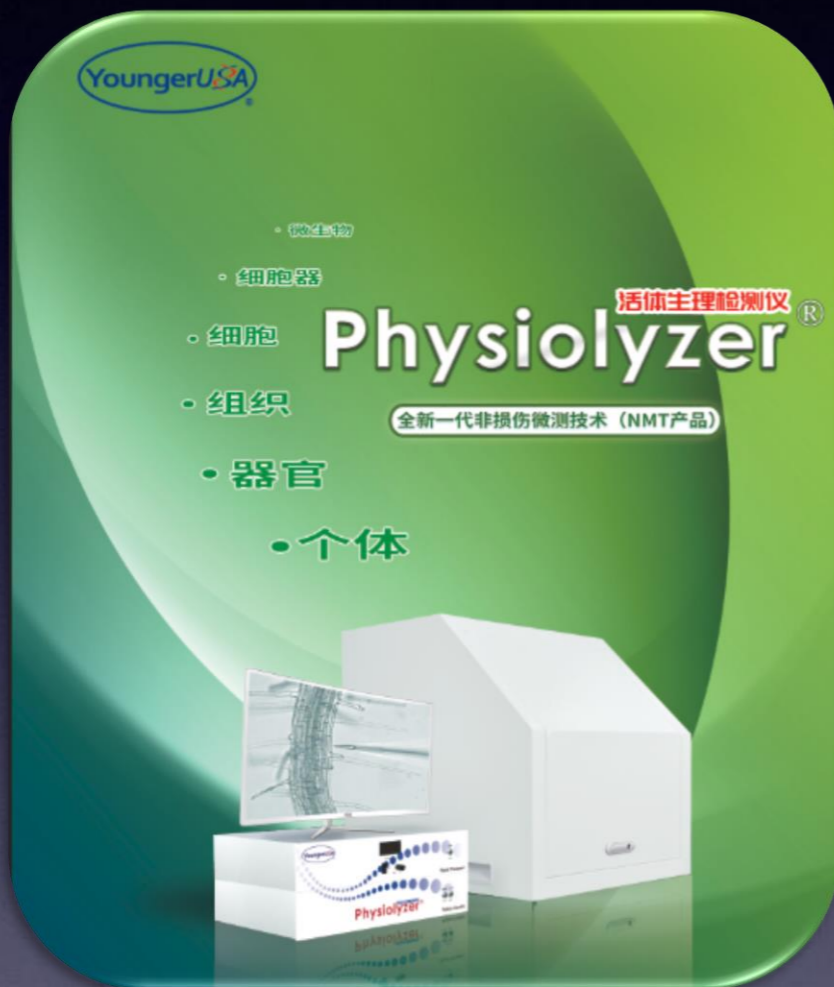


基因测序仪



人类基因组计划

技术突破是学术创新的基础



非损伤微测系统



斑马鱼计划?

资源与支持



- 院士专家顾问组
- 基金支持
- NMT应用专家及群体智慧
- 专业化/商业化服务



2019

Happy New Year



中关村旭月非损伤微测技术产业联盟[®]

Zhongguancun Xuyue Non-invasive Micro-test Technology Industrial Alliance



学术和技术突破

new Developments

Cancer Medicine

Open Access

ORIGINAL RESEARCH

Recombinant horseradish peroxidase variants for targeted cancer treatment

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¹Research Area Biochemical Engineering, Institute of Chemical Engineering, Vienna University of Technology, Vienna, Austria

²Department of Oncology Oxford Institute for Radiation Oncology, University of Oxford, Northwood, Middlesex, U.K.

³Mackenzie Cancer Research Group, Department of Pathology, University of Otago, Christchurch, New Zealand

Keywords

Antibody directed enzyme prodrug therapy (ADEPT), horseradish peroxidase, indole-3-acetic acid, MDA-MB-231 breast carcinoma, *Pichia pastoris*, T24 bladder carcinoma

Correspondence

Oliver Spadiut, Research Area Biochemical Engineering, Institute of Chemical

Abstract

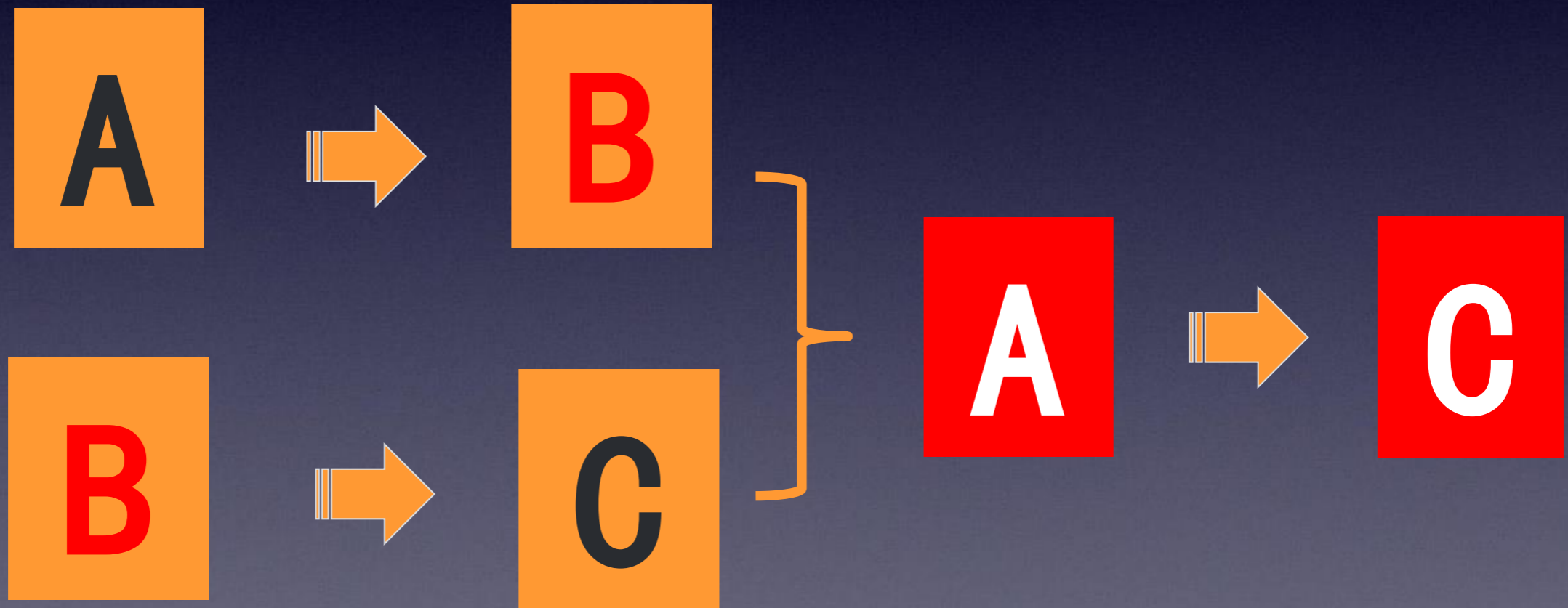
Cancer is a major cause of death. Common chemo- and radiation-therapies damage healthy tissue and cause painful side effects. The enzyme horseradish peroxidase (HRP) has been shown to activate the plant hormone indole-3-acetic acid (IAA) to a powerful anticancer agent in *in vitro* studies, but gene directed enzyme prodrug therapy (GDEPT) studies showed ambivalent results. Thus, HRP/IAA in antibody directed enzyme prodrug therapy (ADEPT) was investi-

植物根 IAA/H⁺
同时检测

人体乳腺肿
瘤组织 O₂/H⁺
同时检测

学术和技术突破

new Developments



学术和技术突破

new Developments

已有知识



新知识

