

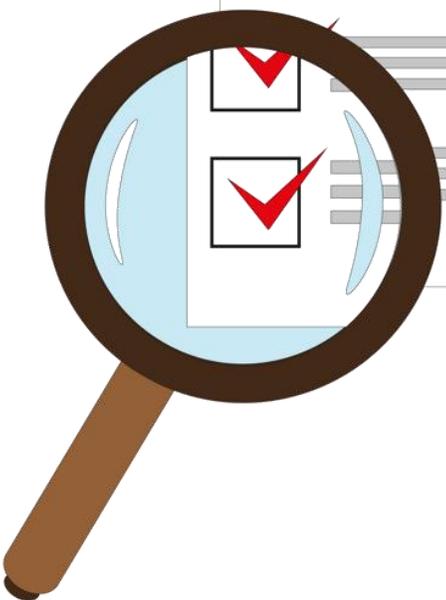
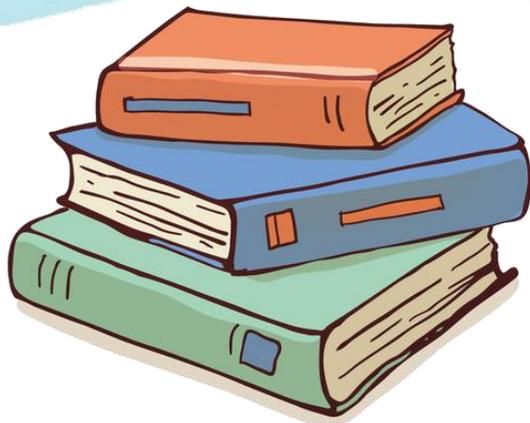
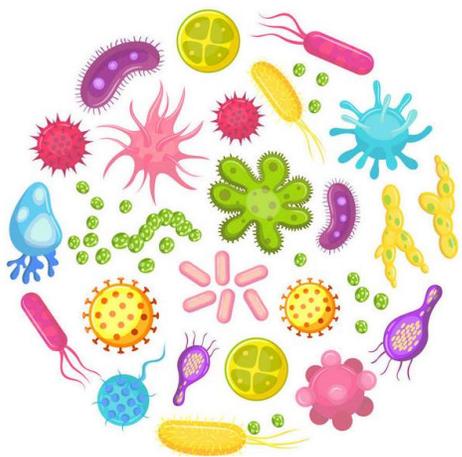


总大肠菌群的测定

——滤膜法(1)



任务准备



任务准备



4个知识点正确率

测定最常用的方法

[值]

显微镜放大倍数

72.7%

微生物的主要类群

87.0%

显微镜放大的原理

89.7%

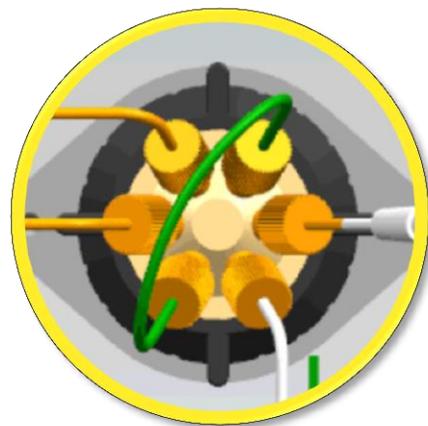
1.任务导入

1.1 复习回顾

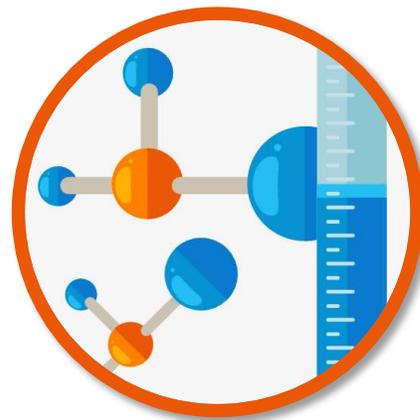
离子色谱法测定硝酸盐氮



淋洗液选择



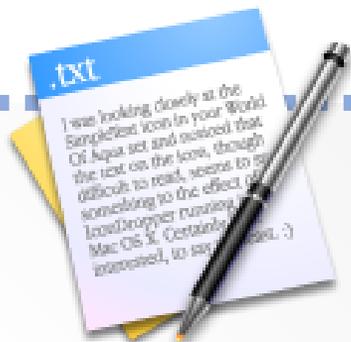
进样方式



分离原理



抑制器作用



标准规范不离手，安全环保记心中。

1.1 复习回顾

水样采集注意事项

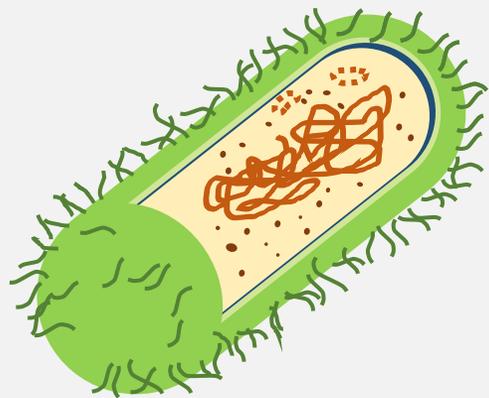
润洗水样瓶

标签记录

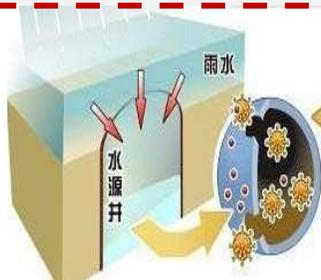


1.2 任务导入

PRAY
FOR



总大肠菌群

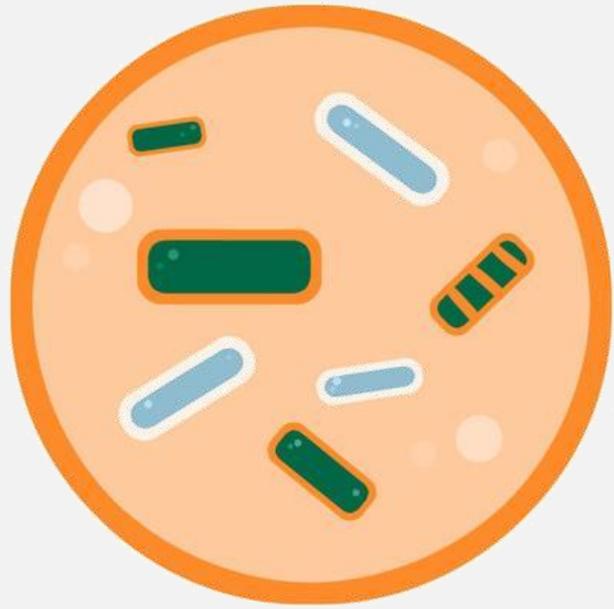


水污染主要原因

23日强降雨，
雨水淹没水源井，
井水大肠菌总数
严重超标，并检
出沙门氏菌



1.2 任务导入

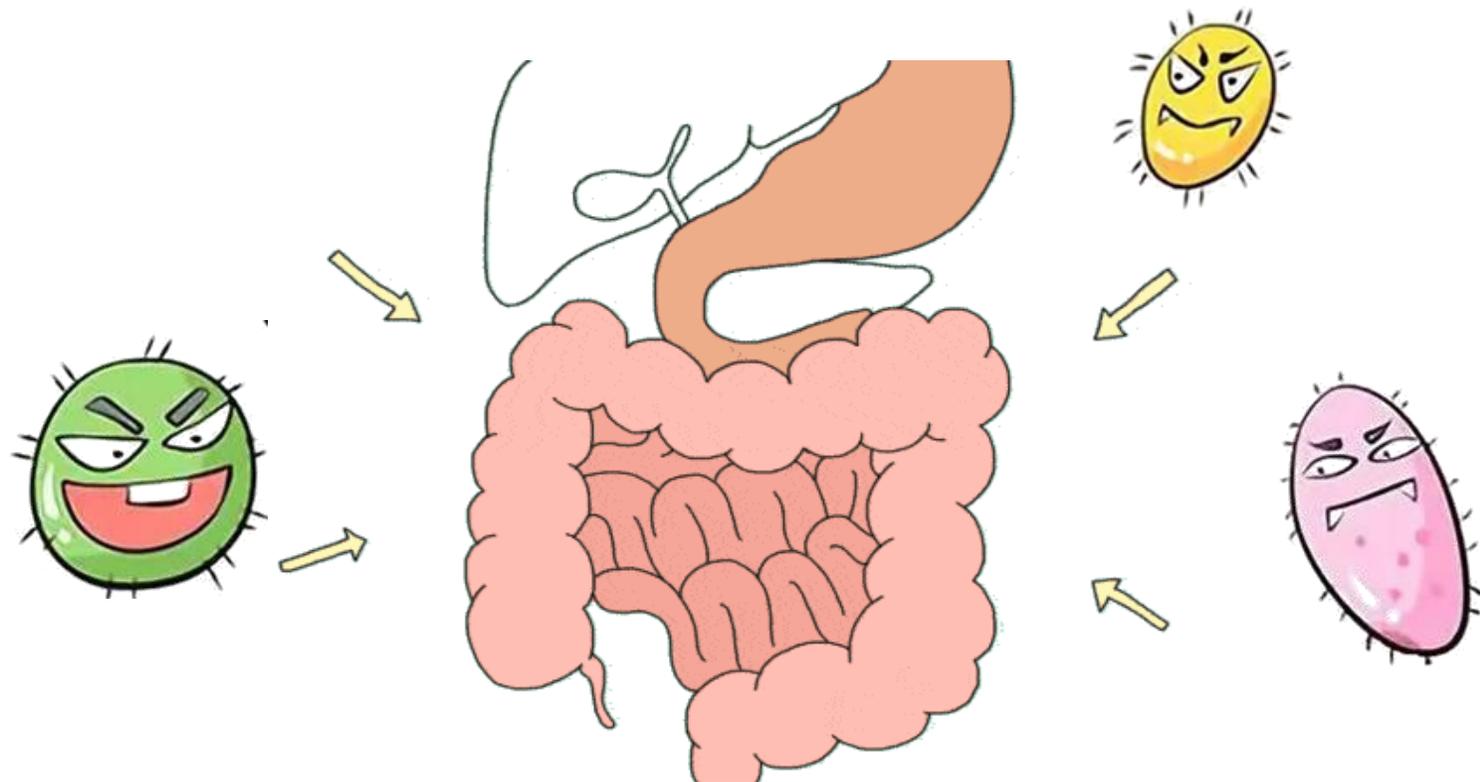


The background features a light blue gradient with faint, repeating molecular structures. On the left and right sides, there are larger, more prominent molecular models composed of blue and teal spheres connected by lines. At the bottom of the image, there are several horizontal, wavy bands in various shades of blue, resembling water or a stylized landscape.

2. 任务剖析

2.1 指标意义

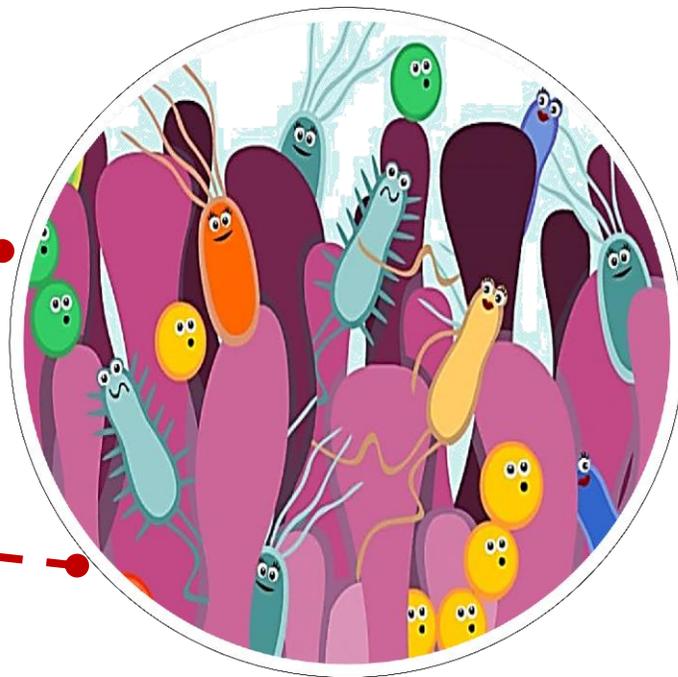
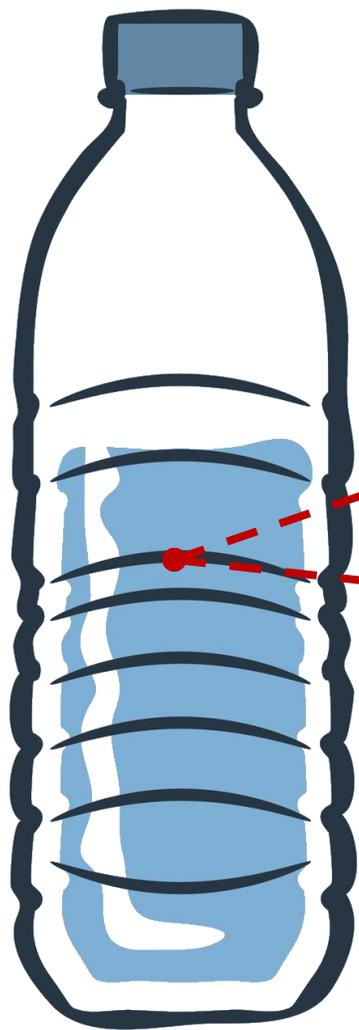
总大肠菌群超标的危害



不合格



2.1 指标意义



指示微生物

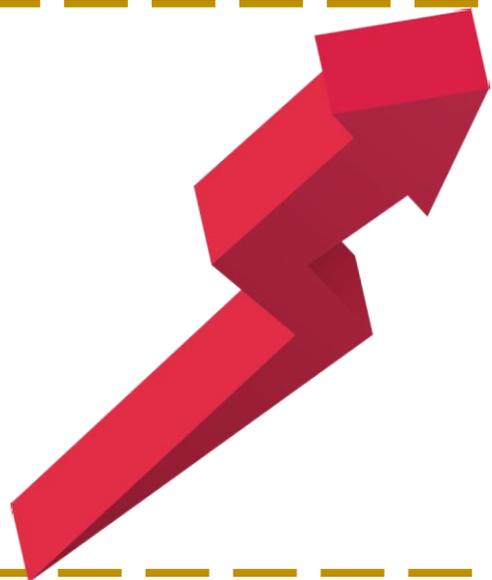


2.1 指标意义

来源相同



指示污染



存活相同



操作简单



2.2 标准解读



ICS 13.060
C 51

GB

中华人民共和国国家标准

GB/T 5750.12—2006
部分代替 GB/T 5750—1985

生活饮用水标准检验方法
微生物指标

Standard examination methods for drinking water—
Microbiological parameters

GB 5750.12-2006

2006-12-29 发布 2007-07-01 实施

中华人民共和国卫生部
中国国家标准化管理委员会 发布

HJ

中华人民共和国国家环境保护标准

HJ 1001—2018

水质 总大肠菌群、粪大肠菌群和
大肠埃希氏菌的测定 酶底物法

Water quality—Determination of total coliforms, fecal coliforms and
Escherichia coli—Enzyme substrate method
(发布稿)

HJ 1001-2018

2018-12-26 发布 2019-06-01 实施

生态环境部 发布

ICS 13.060
Z 50

GB

中华人民共和国国家标准

GB 3838—2002
代替 GB 3838—88, GHZB 1—1999

地表水环境质量标准

Environmental quality standards for surface water

GB 3838-2002

2002-04-28 发布 2002-06-01 实施

国家环境保护总局
国家质量监督检验检疫总局 发布

HJ

中华人民共和国国家环境保护标准

HJ 755—2015

水质 总大肠菌群和粪大肠菌群的测定
纸片快速法

Water quality Determination of total coliforms and fecal coliforms
Paper strip method
(发布稿)

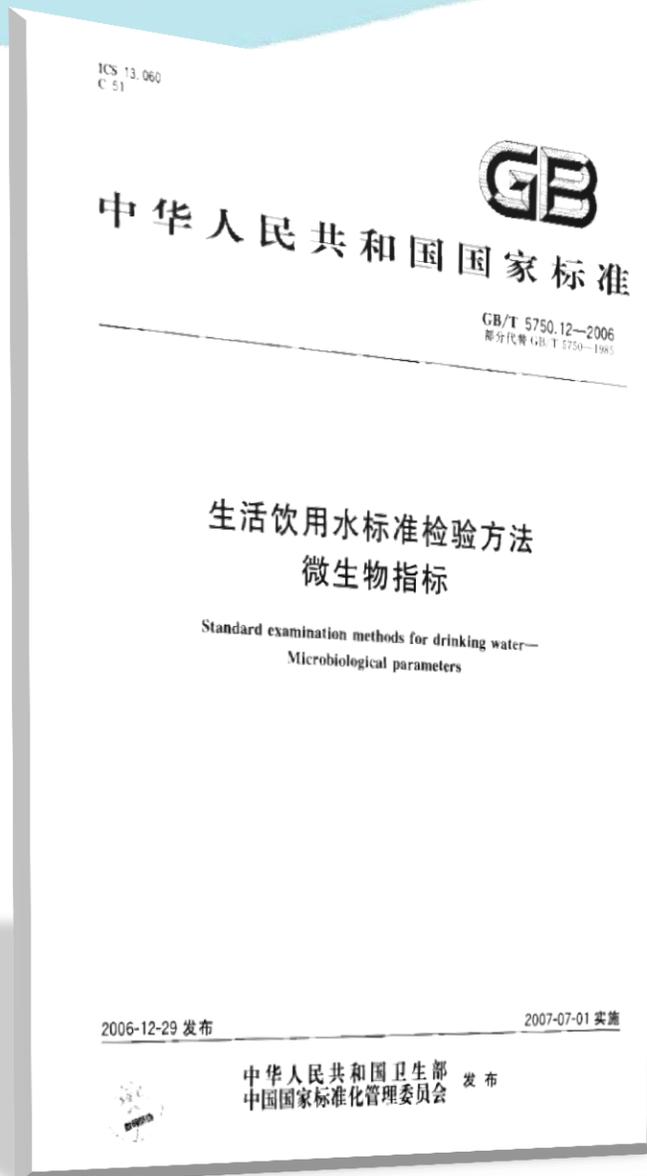
本电子版为发布稿。请以中国环境科学出版社出版的正式标准文本为准。

HJ 755-2019

2015-10-22 发布 2015-12-01 实施

环境保护部 发布

2.2 标准解读



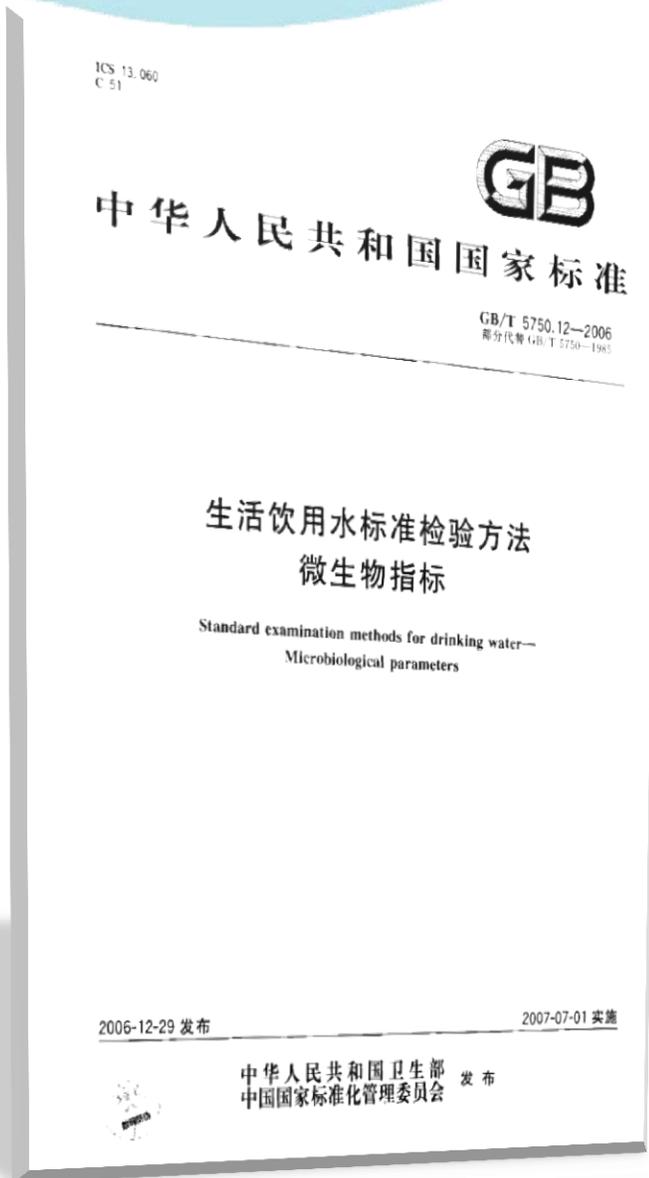
GB/T 5750.12-2006

《生活饮用水标准检测方法 微生物指标》

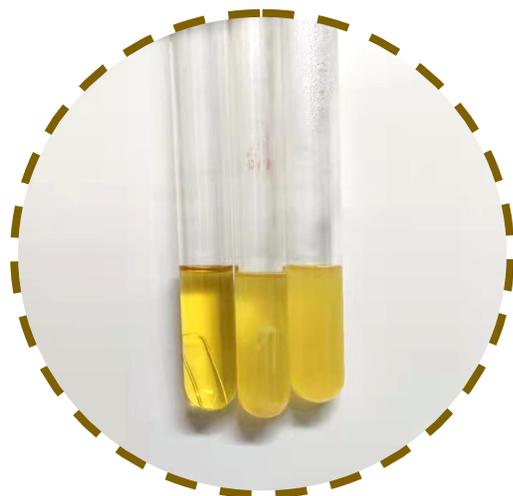
总大肠菌群的测定

1. 多管发酵法
2. 滤膜法
3. 酶底物法

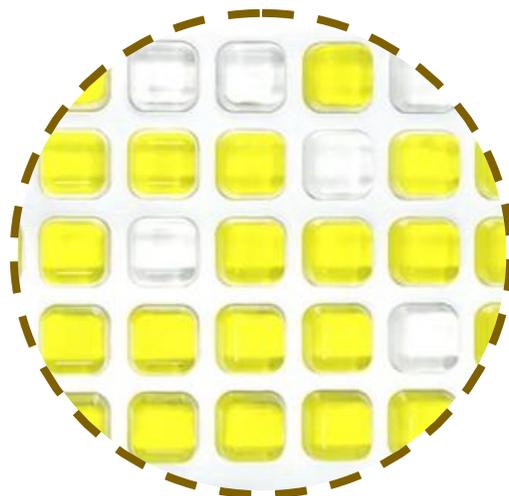
2.2 标准解读



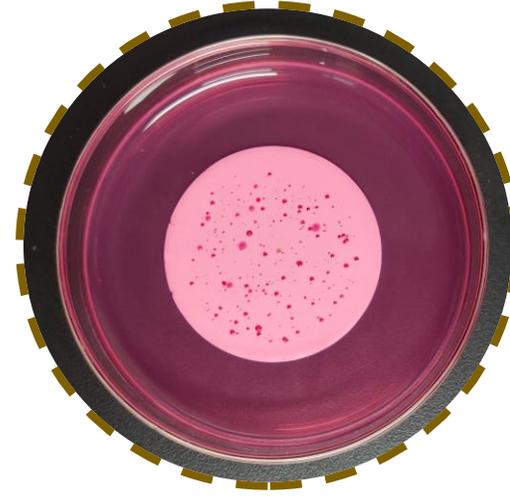
多管发酵法



酶底物法



滤膜法



限定值：不得检出

2.2 标准解读



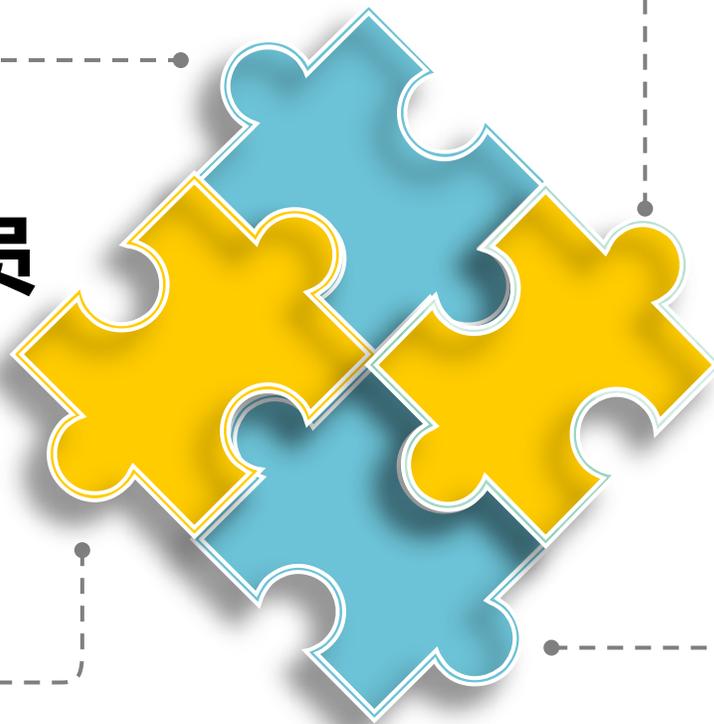
2.3 任务分工



检验员



记录员



试剂员



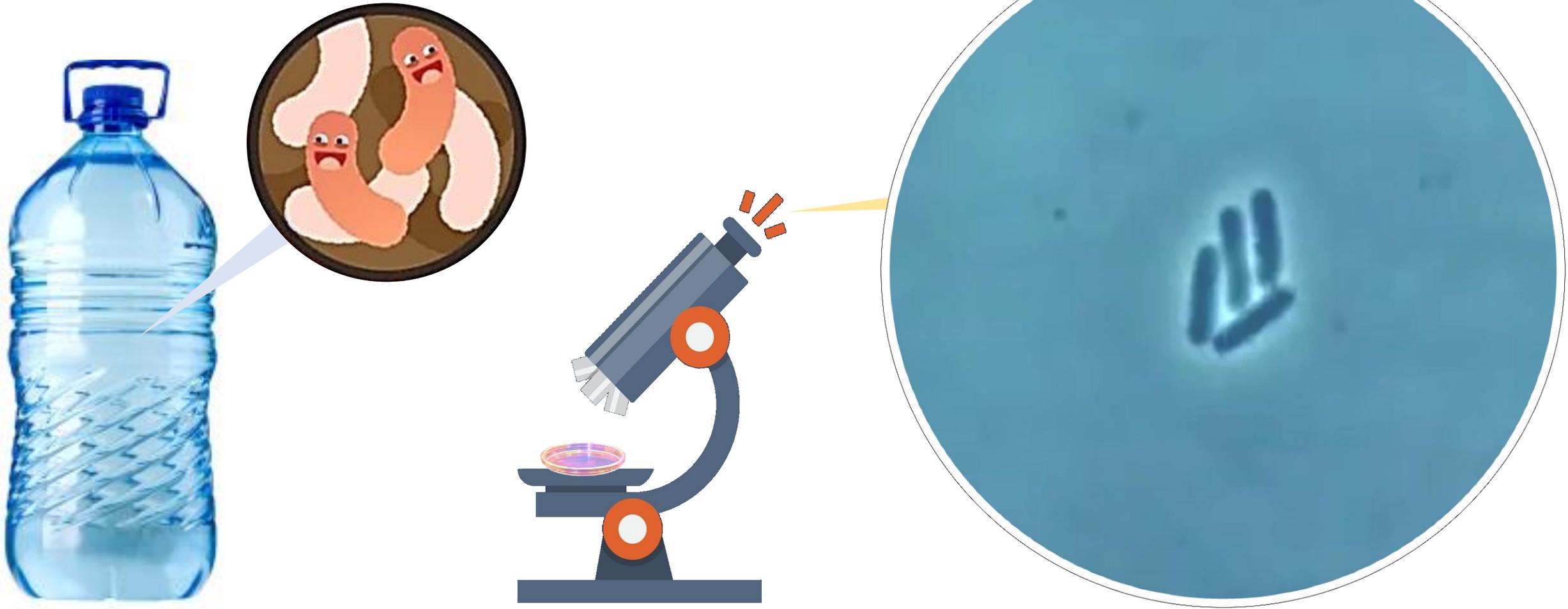
质量负责人



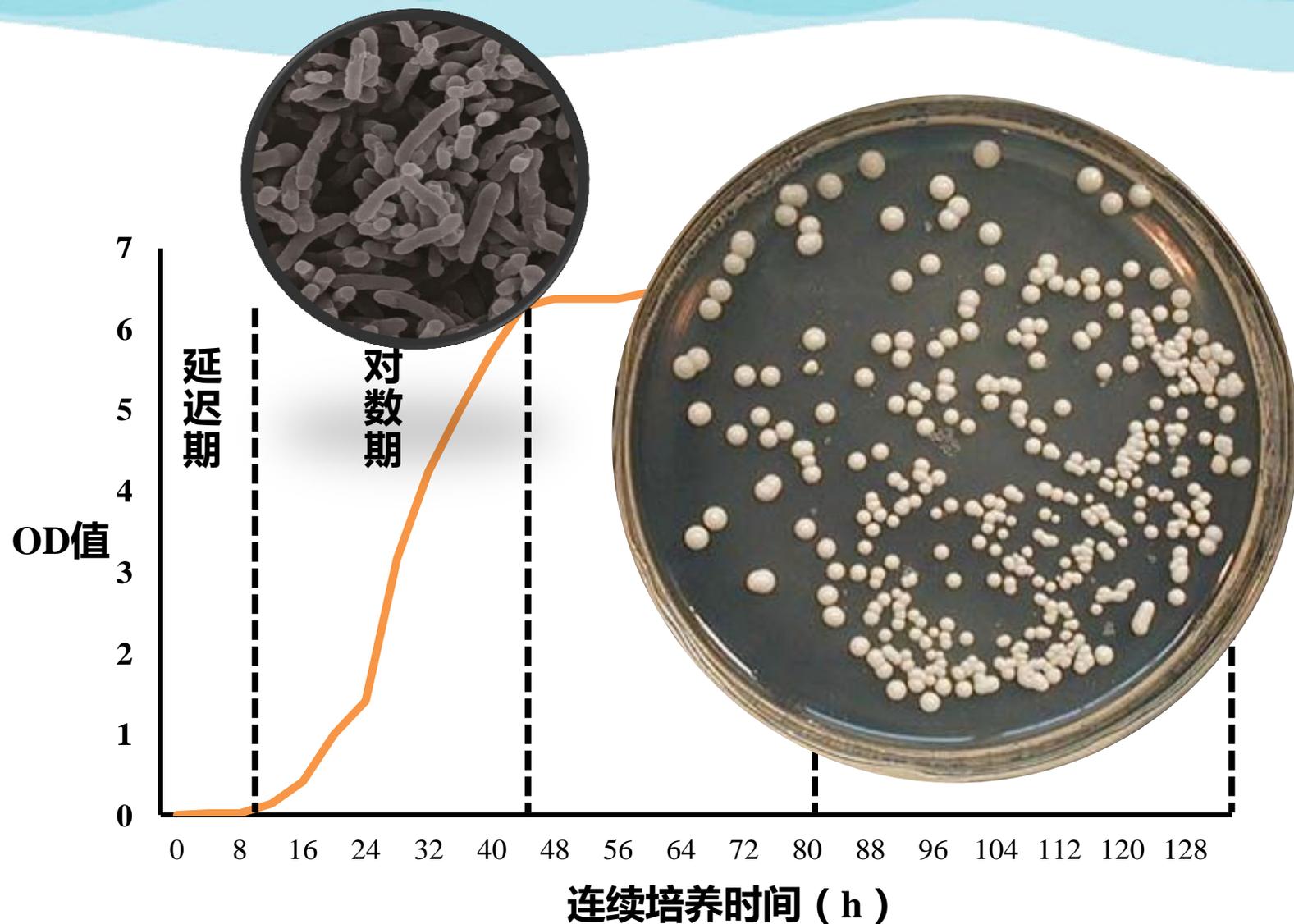
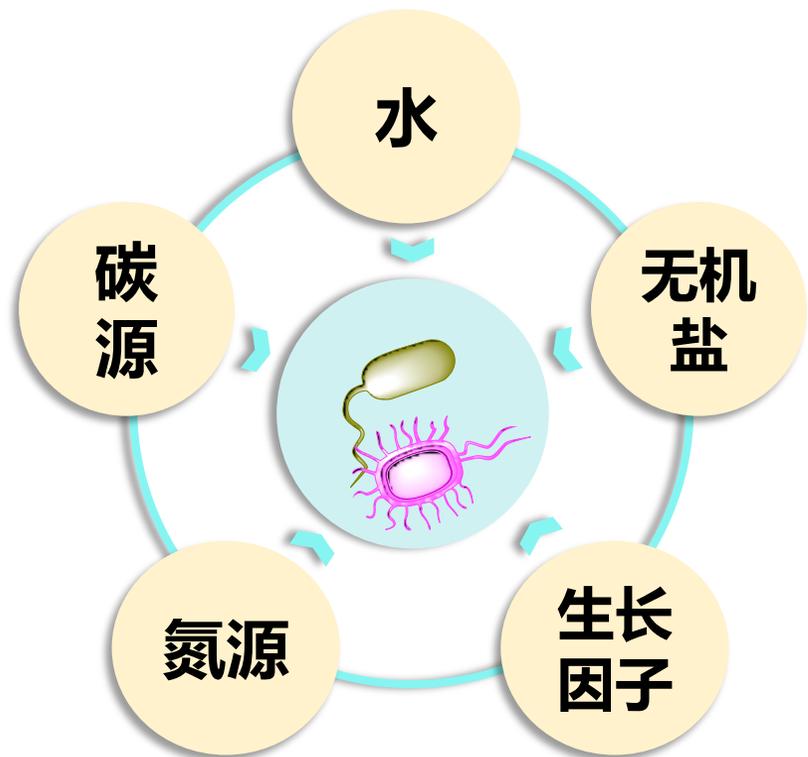
The background features a light blue gradient with faint, repeating molecular structures. On the left and right sides, there are larger, more prominent molecular models consisting of blue spheres connected by lines. At the bottom of the image, there are several horizontal, wavy bands in various shades of blue, resembling water or a stylized landscape.

3. 测前必备

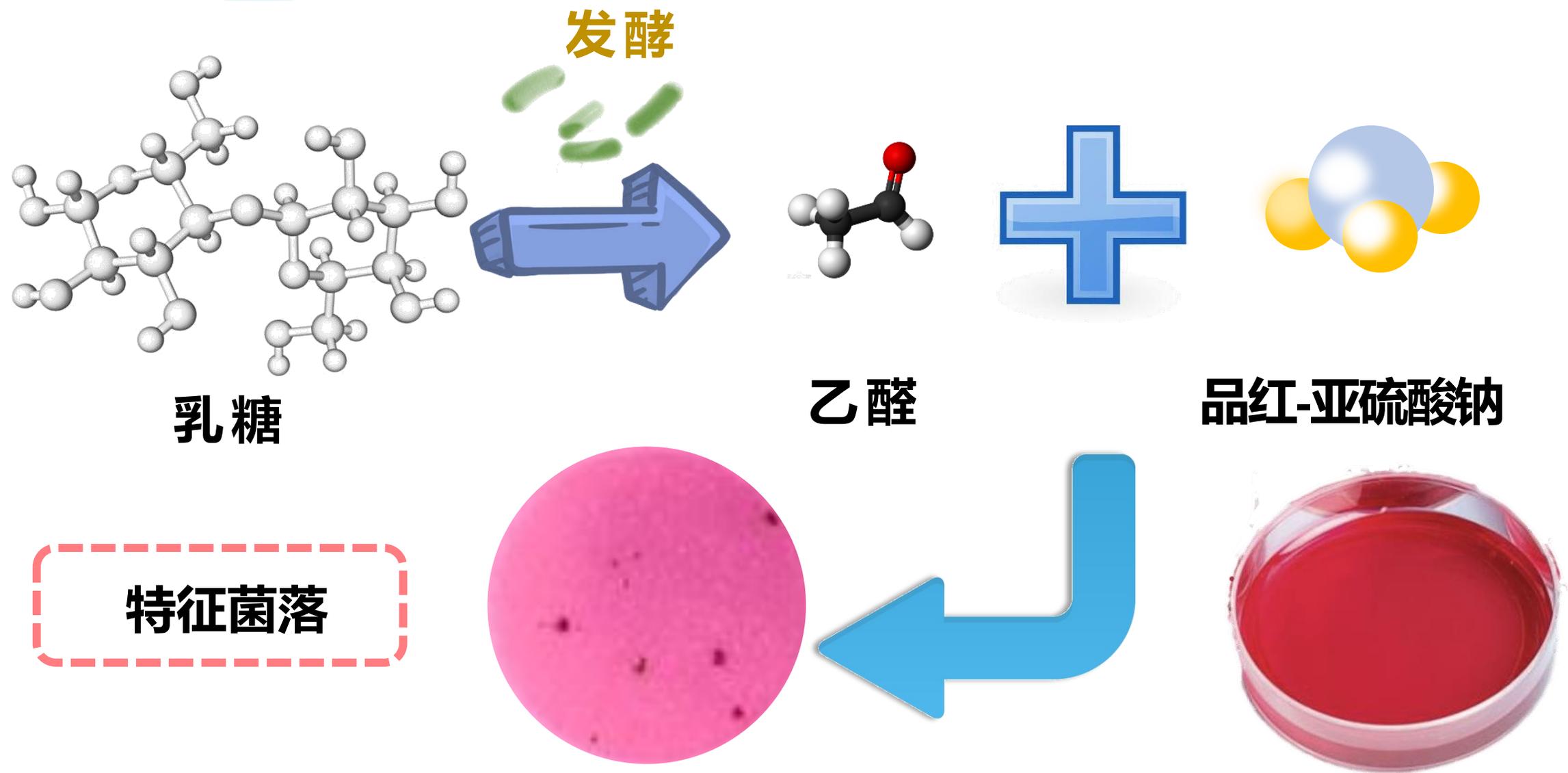
3.1 原理解析



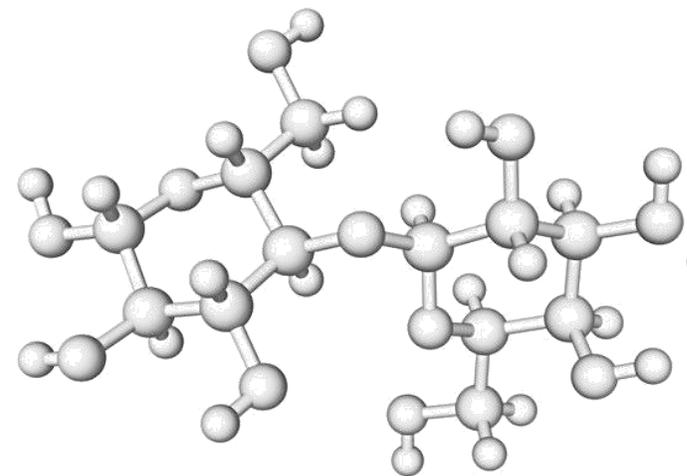
3.1 原理解析



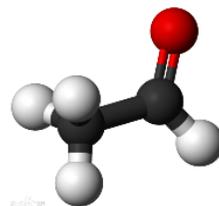
3.1 原理解析



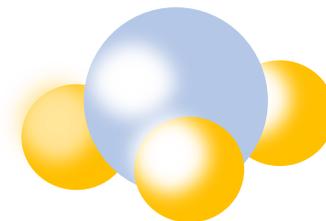
发酵



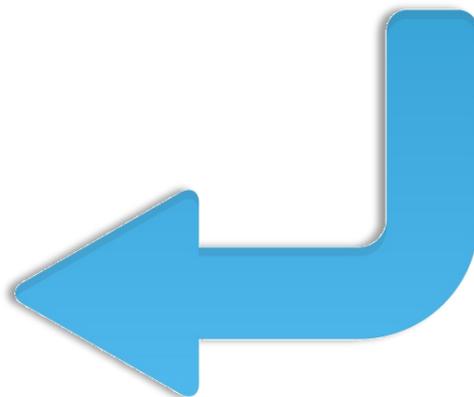
乳糖



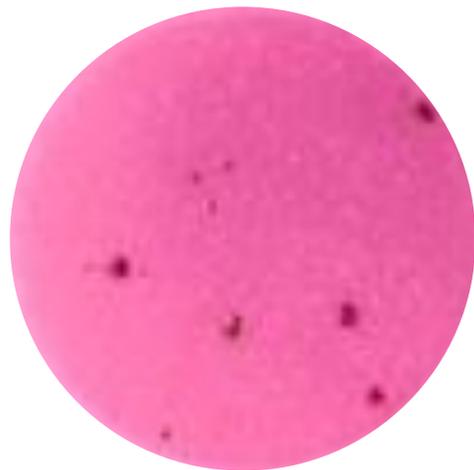
乙醛



品红-亚硫酸钠

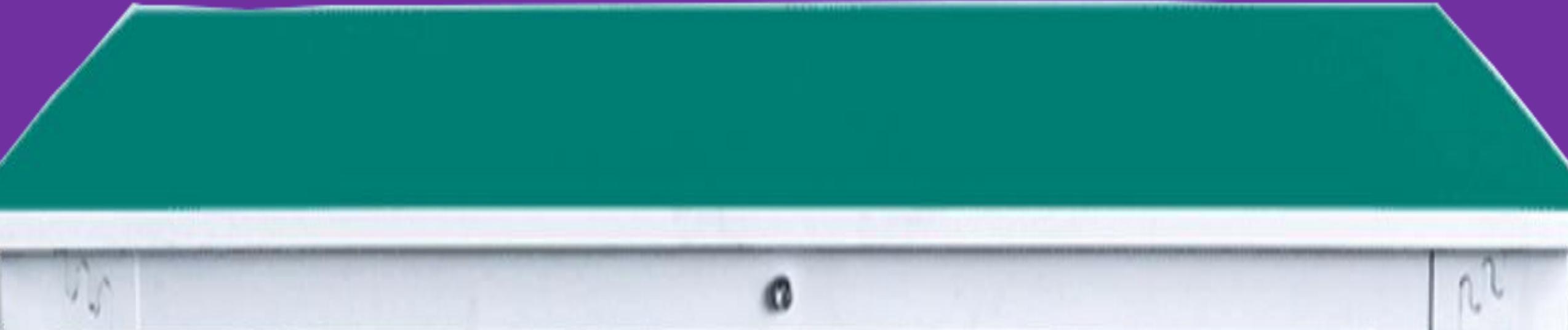


特征菌落





仪器拖拽游戏





3.2 备试剂、仪器

用品灭菌



说明
称取本品52.5克，加入1000ml蒸馏水中，加热煮沸溶解，分装，115℃高压灭菌20分钟备用。

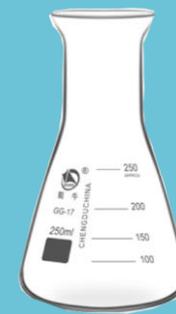
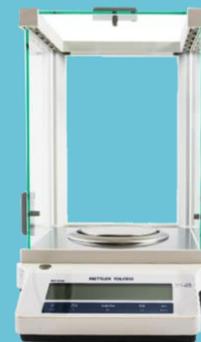
成分 (g/L)

蛋白胨	10g	牛肉浸膏粉	5g
乳糖	10g	酵母浸膏粉	5g
碱性品红	1g	磷酸氢二钾	3.5g
亚硫酸钠	5g	琼脂	13g

技术标准

- (1) 本品参照GB/T8538-2008标准配方配制
- (2) pH值7.2 ± 0.2;
- (3) 用标准菌株检验符合质控标准。

ISO9001-2008 quality system certification enterprises
AoBoXing Product
Address: Jia 3-1-10, Meiyuan Residential Quarter, Haidian District, Beijing, Zip Code: 100193



3.2 备试剂、仪器

水样采集



100 mL

时间：XXX

地点：XXX

采样人：XXX

检测项目：总大肠菌群



3.2 备试剂、仪器

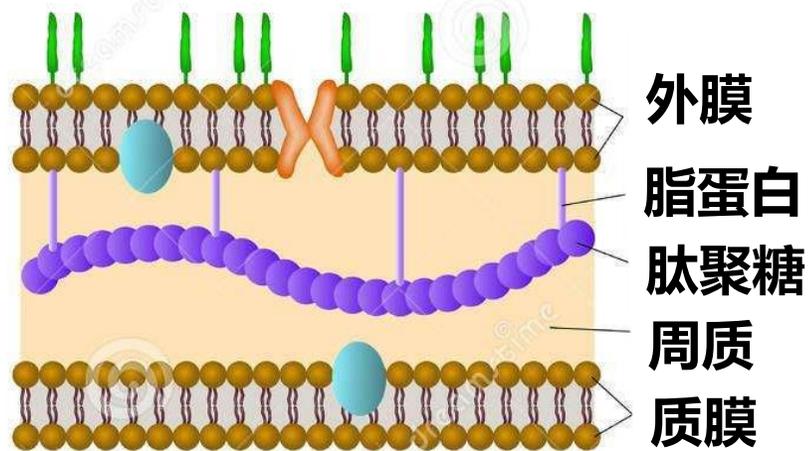
滤膜法测定



3.2 备试剂、仪器

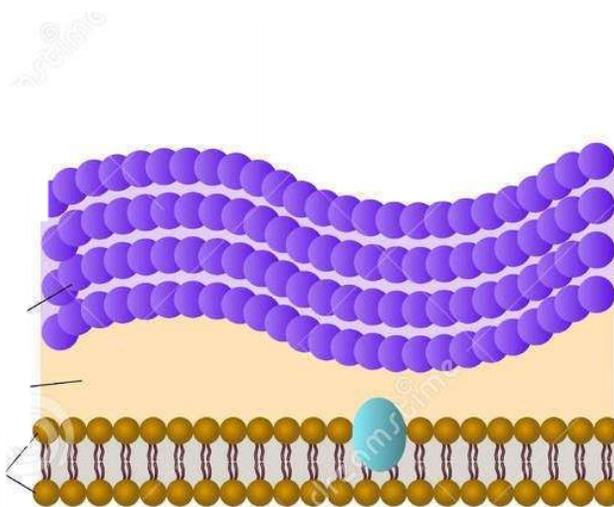
革兰氏染色

革兰氏阴性菌G⁻和革兰氏阳性菌G⁺



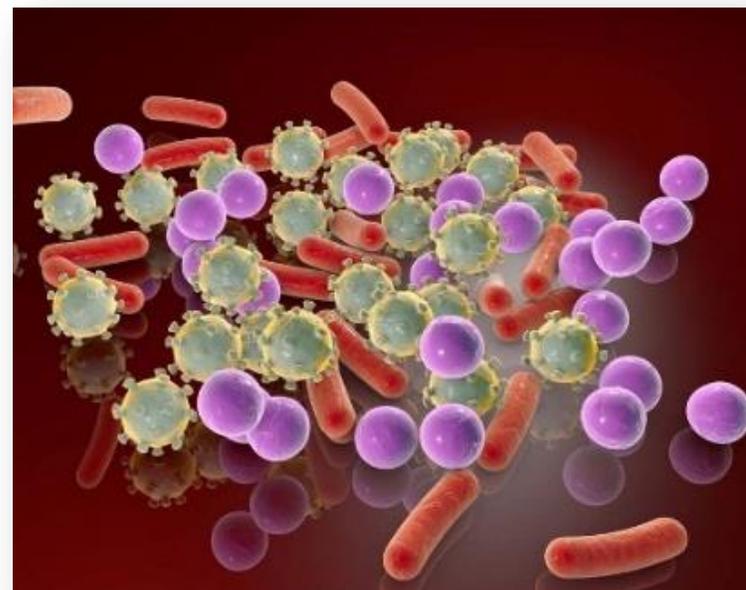
脂多糖

革兰氏阴性菌细胞壁



蛋白质

革兰氏阳性菌细胞壁

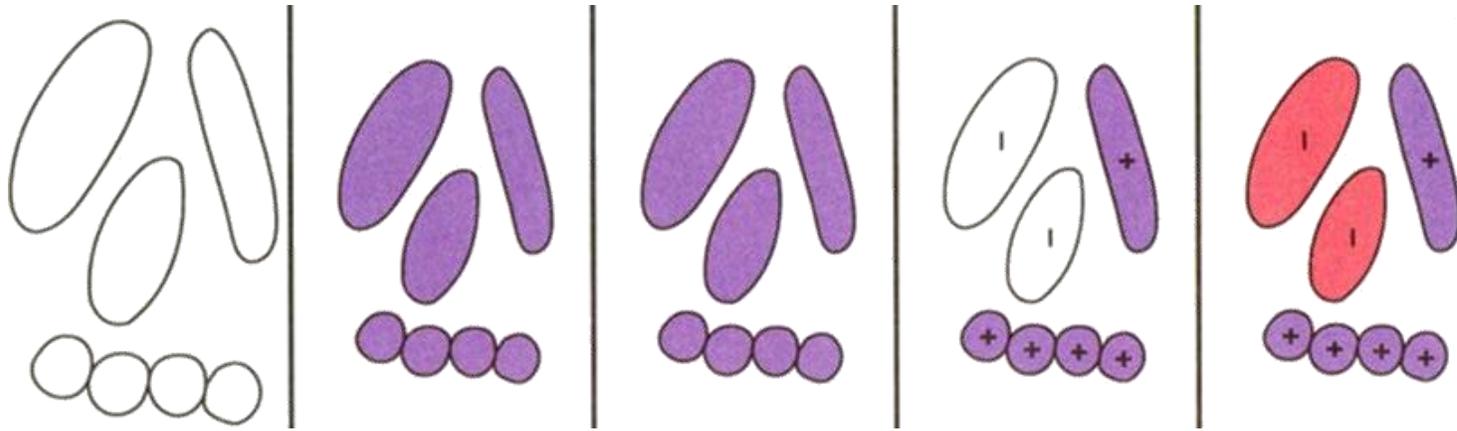


G⁺显示紫色

G⁻显示红色

3.2 备试剂、仪器

革兰氏染色

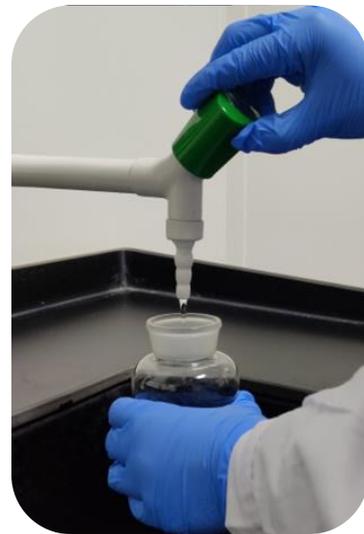


4. 情景实练

The background features a light blue gradient with faint, repeating molecular structures. On the left and right sides, there are larger, more prominent molecular models composed of blue and teal spheres connected by lines. At the bottom of the image, there are several horizontal, wavy bands in various shades of blue, resembling water or a stylized landscape.

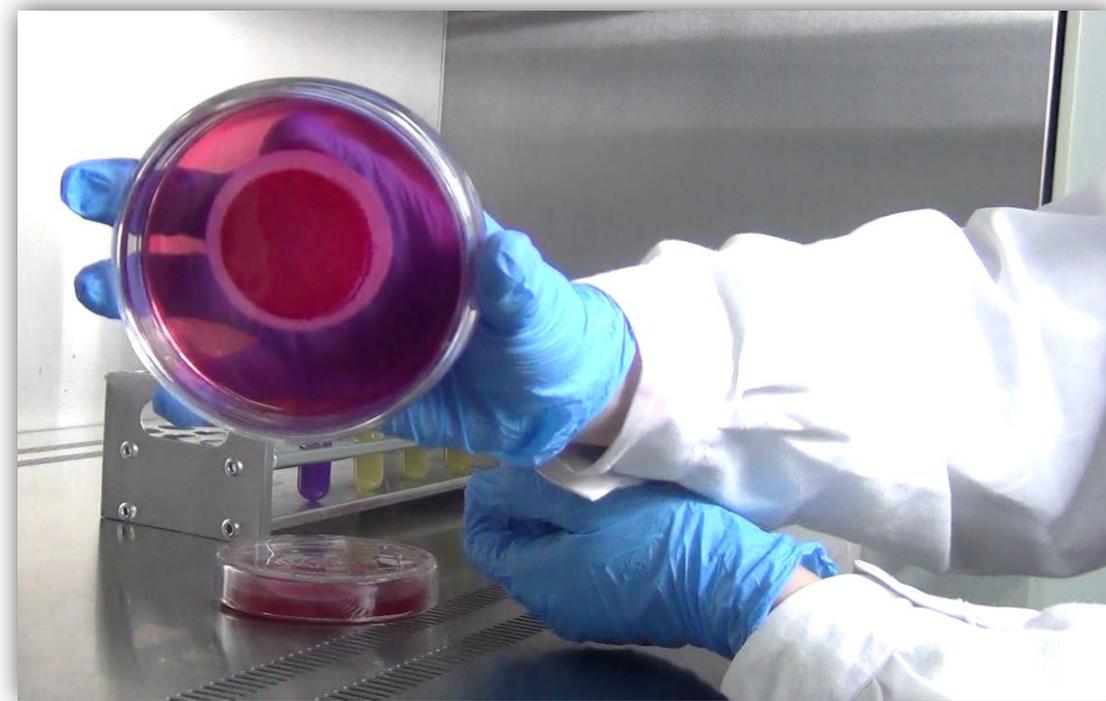
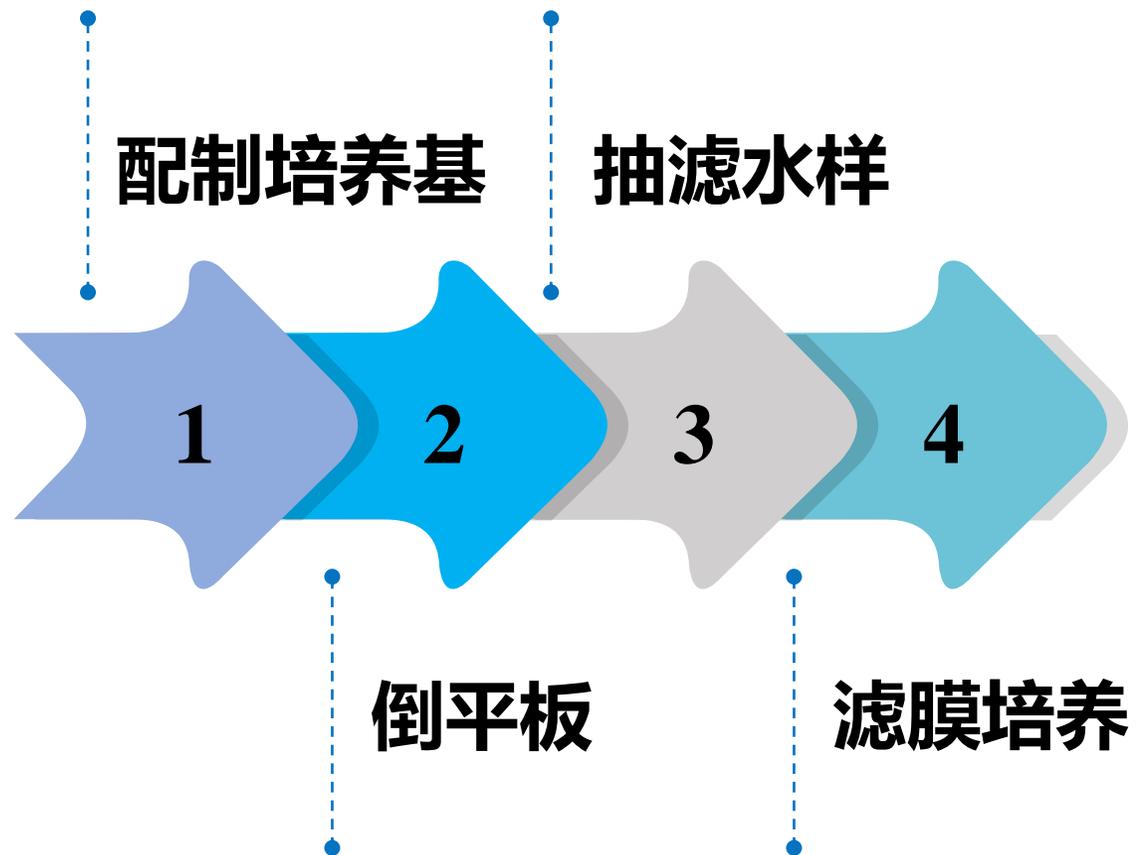
4.1 实验步骤

采集水样



4.1 实验步骤

检验水样



4.1 实验步骤

配培养基

称量培养基

+

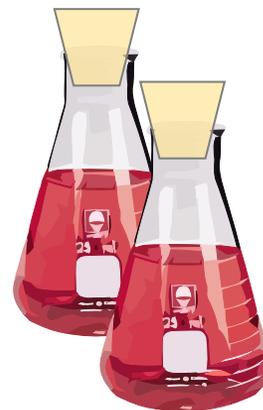
1000 mL水



加热煮沸、
溶解分装



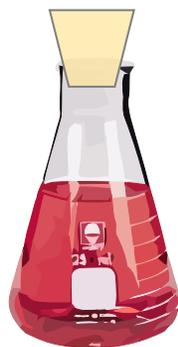
115°C 灭菌
20 min



4.1 实验步骤

倒平板

加热融化品红亚硫酸钠培养基



在超净工作台中，取灭菌的培养皿



缓慢倒入培养基，等待凝固



4.1 实验步骤

抽滤水样



①



②



④



③



组装置，加入
水样

0.5 个大气压
下抽滤

滤完再抽5s

4.1 实验步骤

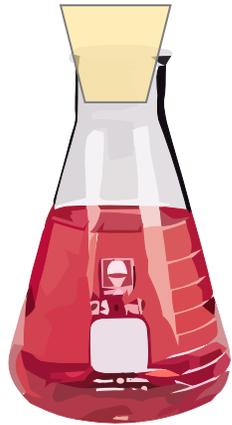
滤膜培养



操作过程



4.2 注意事项



4.3 结果判读

结果判断

紫黑色中心较深的阳性菌落

水样中总大肠菌群的菌落数

$$\text{CFU}/100\text{mL} = \text{阳性菌落数} \times 100 / V_{\text{过滤}}$$

4.4 仿真练习



4.5 操作要点

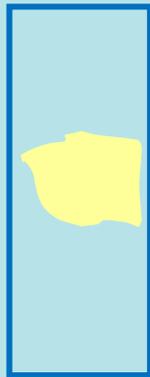


“三字” 秘诀
“外” “定” “盖”

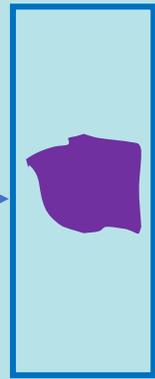
安全规范

4.6 操作练习

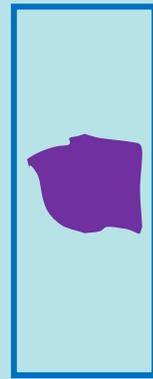
① 涂片
固定



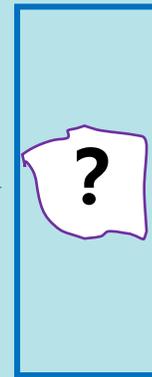
② 结晶紫
初染



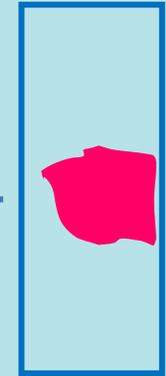
③ 碘液
媒染



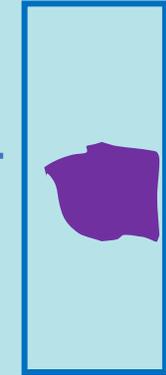
④ 乙醇
脱色



⑤ 番红
复染



G⁻



G⁺



4.6 操作练习



1

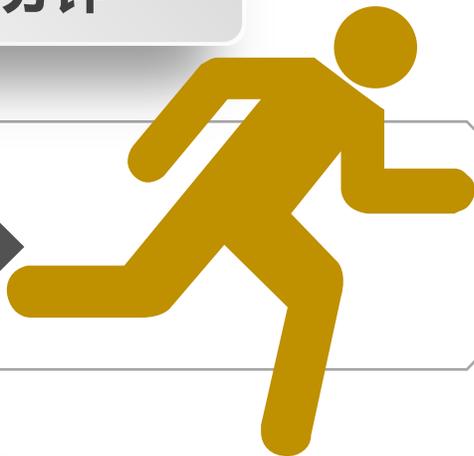
组间PK练习：2个水样

3

限时10分钟

2

分组分角色轮岗



番茄时间



4.6 操作练习



番茄时间

00

00

01

09

~~00~~

~~00~~

Hours

Minutes

Seconds

5. 查缺补漏

5.1 仿真练习不足

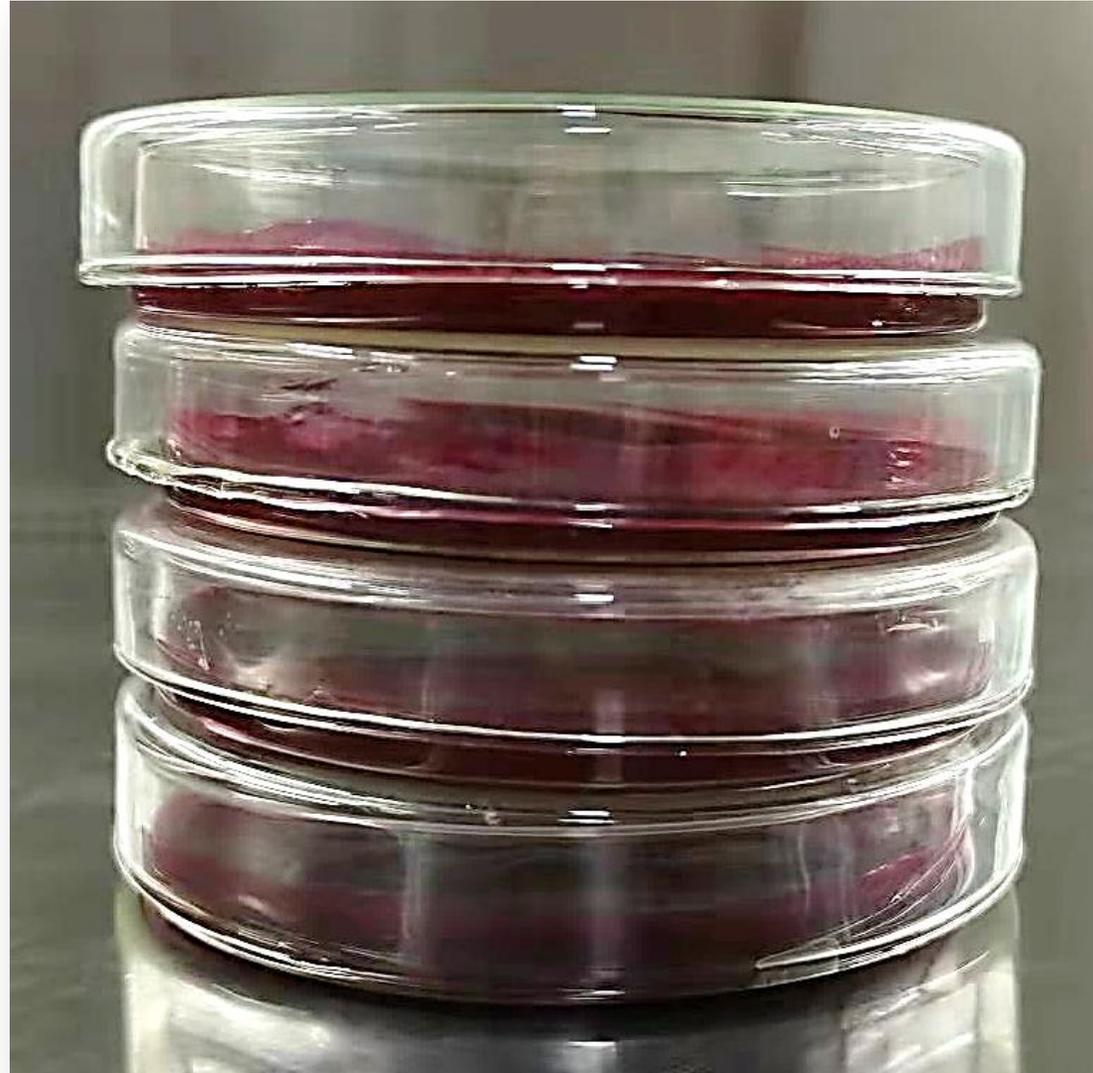


5.2 实操练习不足



培养基过满

5.2 实操练习不足



平板不均匀

5.2 实操练习不足

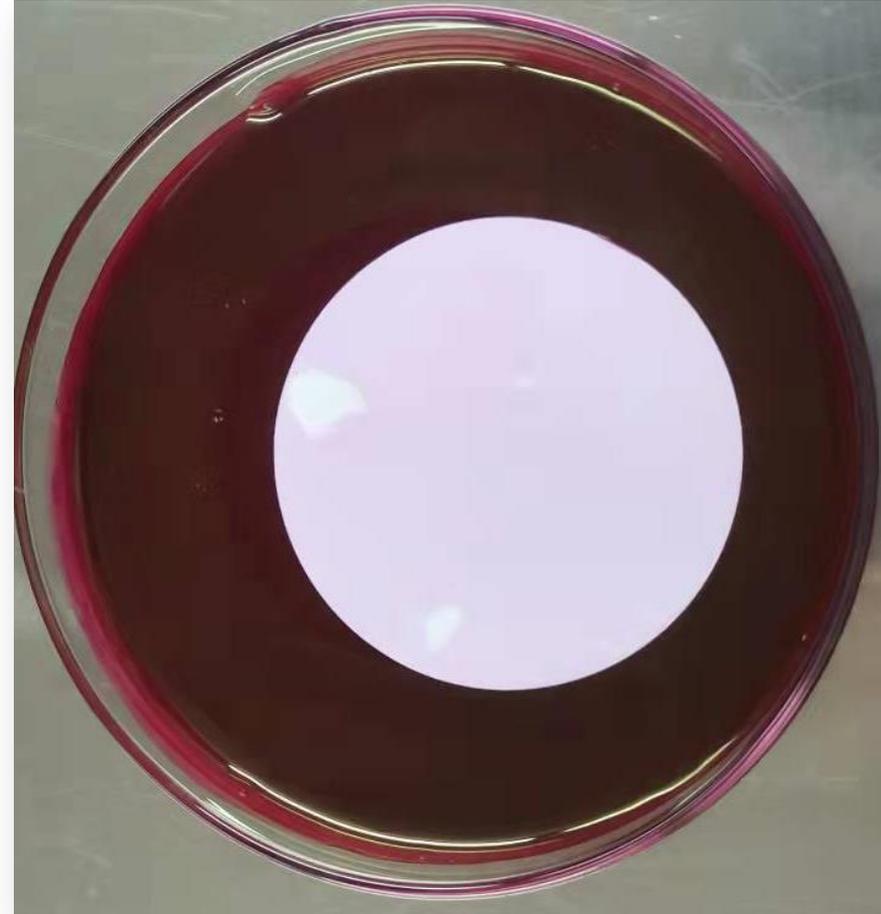
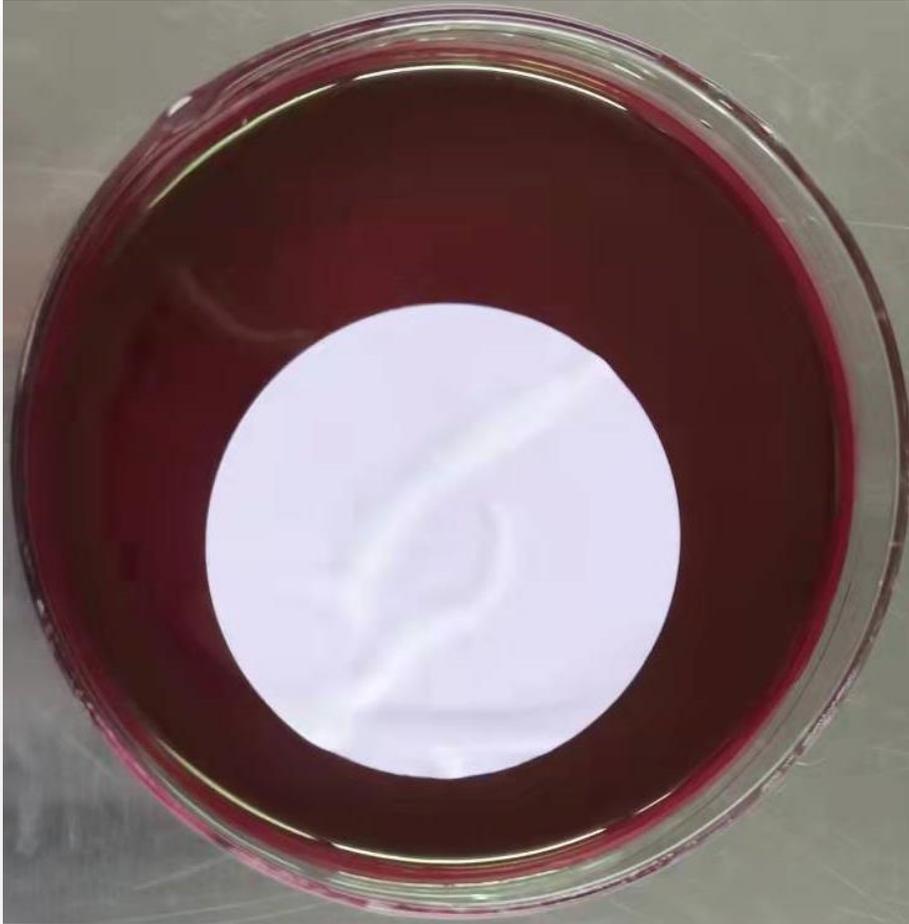


镊子没过火

5.2 实操练习不足



滤膜不紧贴



6. 总结评价

The background features a light blue gradient with faint, stylized molecular structures. On the left and right sides, there are larger, more prominent molecular models with blue and teal spheres connected by lines. At the bottom, there are several horizontal, wavy bands in various shades of blue, resembling water or a stylized landscape.

6.1 任务评价



任务三 总大肠菌群的测定（滤膜法） 实验记录单



水样编号		检测日期	
样品种类		包装形式	
标准依据		样品性状	
主要仪器设备			
检测项目	<div> <p>培养24 h 记录结果</p> </div>		
判定依据			
检测结论			

6.2 结果判读



3 CFU/100mL

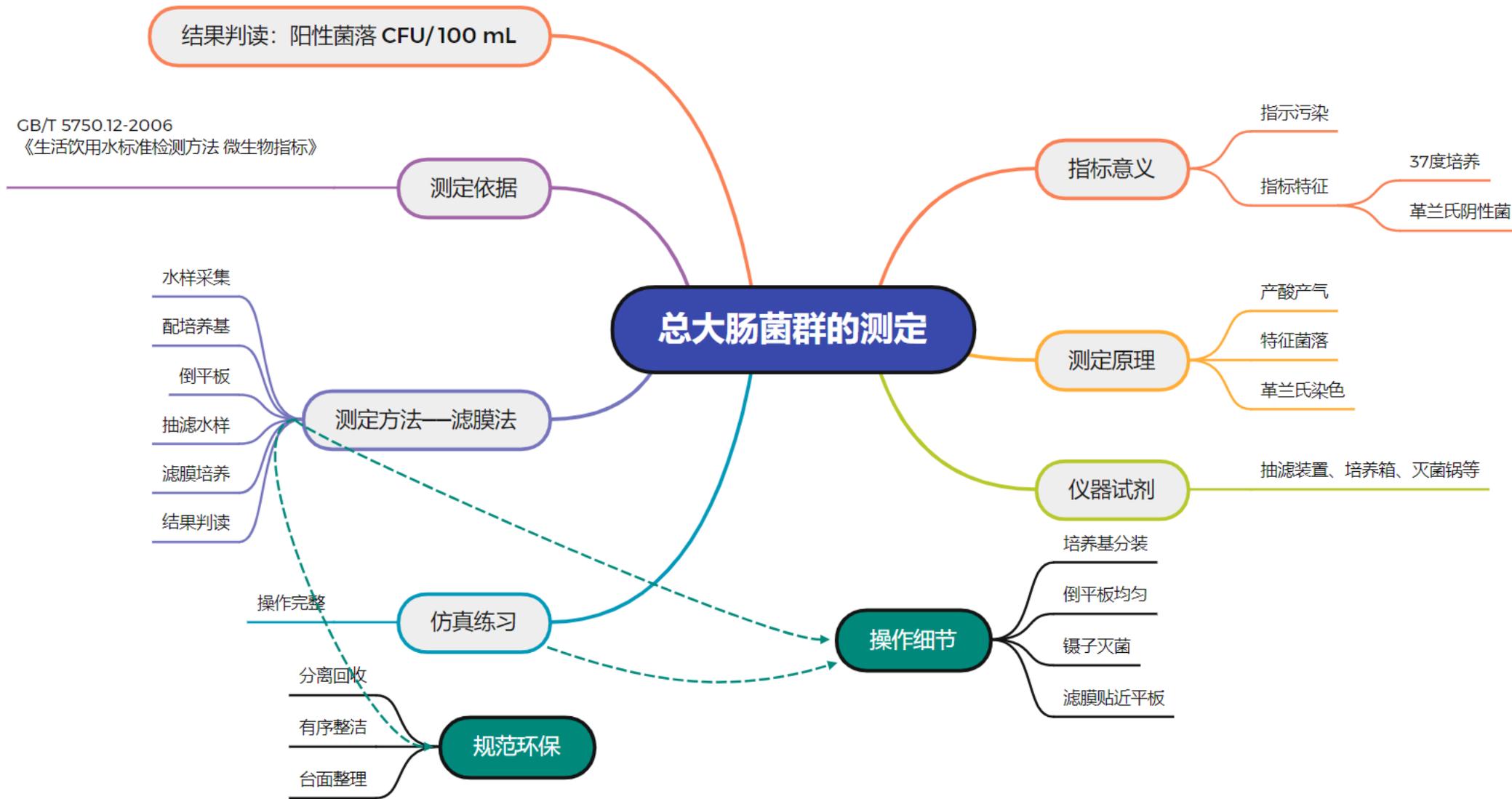


5 CFU/100mL



24 CFU/100mL

6.3 任务总结



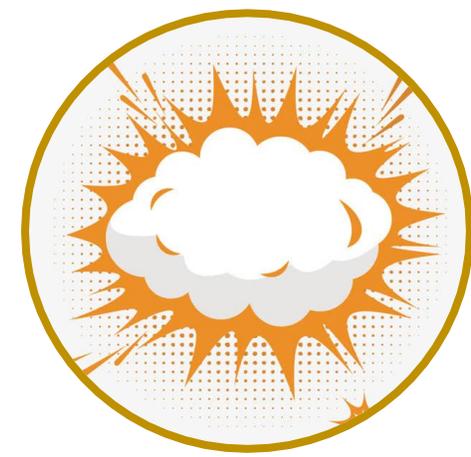
6.4 风险防范



升温度



观压力



查水位