	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

Approval process

审批过程

	Name 姓名	Title 职务
Drafted by 起草人	Xu Guangxiang 许光祥	EHS Officer
Reviewed by 审阅人	Yigal Cohen; Shaogang Chen 陈少刚; Sehoon Park;	PVC & General Director; PVC assistant & Safety coordinator; Academy Safety Representative;
Approved by 批准人		Campus Safety Committee;

Reversion records


版本历史记录

Rev. No. 版本号	Publication date 出版日期	Rev. reason/ content modified 再版原因/更改内容
01	2019-04-02	New file 新建文件
02	2021-11-01	Update the blue font content according to our lab situation. 根据实际情况更新红色字体部分内容
03	2025-12-01	Regular renew 周期审阅更新

Relevant departments (select relevant departments with a “V”)

相关部门 (用√勾选相关部门)

Academic Administration Office 学术行政办公室	√	Institute Operation Dept. 校园运营部	√	Human Resource Dept. 人力资源部	√
Research Innovation and Graduate Dept. 研究创新和研究生 部	√	Undergraduate Education Dept. 本科教学部	√	Computer Information Dept. 电脑信息部	√

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

Distribution mode (black)


发放方式 (涂黑)

Electronic edition ☒

电子版 ☒

Paper edition ☐

纸版 ☐

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

1. Purpose 目的

Effectively conduct comprehensive biosafety management for biological laboratories to ensure the safety of workers.

有效地针对生物实验室进行全面的生物安全管理，确保工作人员的安全。

2. Scope 范围

lab Suitable for biological specialized labs, including biosafety level I/II biological labs.

适用于生物专业实验室，包含生物安全级别为为一级/二级生物实验室。


3. Responsibility 职责

3.1. EHS office EHS 办公室：

- Assist the Department of Biology in establishing lab biosafety guidelines;
协助生物学科建立实验室生物安全操作指引；
- Provide relevant domestic laws and regulations for the establishment of lab biosafety operation guidelines;
为建立实验室生物安全操作指引提供相关国内法律法规依据；
- Provide appropriate safety advice for lab biosafety operation guidelines management.
为实验室生物安全操作指引管理提供相应安全咨询。
Assist BFE program or labs in applying for biology lab registration in authority management system.
协助学科或实验室申请生物实验室备案。

3.2. Academic Leader of Biology 生物学学术负责人：

- Responsible for the safety related management work and duties of the lab

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

负责本学科实验室安全相关管理工作和职责；

- Designated discipline lab safety leader and faculty;

指定学科实验室安全负责人和教员；

- To determine the lab safety management capability of academic lab leaders and instructors.

确定学科实验室负责人和教员具备实验室安全管理能力。

3.3. Head of Biological Lab 生物学科实验室负责人：

- Assign the relevant responsible person to be responsible for the safety management of each lab of the discipline;

指派相关负责人负责本学科各个实验室安全管理工作；

- Organize the education and training of the lab biosafety operation guidelines.

组织实验室生物安全操作指引的教育培训。

3.4. Lab instructor 实验室教员：

- Responsible for the development of safety behavior standards and related assessment systems in the lab;


负责制定实验室内安全行为准则和相关的考核制度；

- Responsible for providing safety education assessment in the lab.

负责提供实验室内的安全教育考核工作。

4. General Requirement 一般规定

If the laboratory involves different biosafety levels, it needs to be designed and constructed

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

according to the laboratory safety level and pass the audit and record of the local health management department before it is officially put into use.

如实验室涉及不同生物安全等级，则需要根据实验室安全等级进行设计和施工，并通过地方卫生管理部门的审核和备案方可正式投入使用。

Laboratory staff must learn what risks exist for particular materials in a laboratory and must receive training in proper handling and operations of laboratory materials.

实验室工作人员必须了解实验室中的特定实验物料存在哪些风险，必须接受正确处理和操作实验室材料的培训。

Lab staff must periodically update their knowledge and skills to ensure high safety retention levels.

实验室工作人员必须定期更新他们的知识和技能，以确保安全操作认知水平。

There should be an operations instruction for each critical equipment of laboratory that identifies hazards that may be encountered and what protection is needed for these risks.

每个实验室都针对实验室重要设备编制操作指引，确定潜在的风险以及控制措施。

对危害、安全程序和实验室技术有认识的人应该指导工作。

- Check the safety operation and safety equipment inspection plan at least once a year;
针对安全操作和安全装备的检查方案，至少每年检查一次；
- Establish a safety checklist, provide information for retrospective inspections and record them to form safety inspection records;
建立安全清单，为回顾性检查提供资料并进行记录，形成安全检查记录；
- Identification and marking of dangerous goods and dangerous areas;

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

对危险品、危险区进行鉴定并加以标志；

- Report all incidents and potential risk factors in a timely manner as required;

按规定及时报告所有的事件和潜在的危险因素；

- The person in charge of the lab shall regularly conduct safety training for the staff and train emergency measures in various emergency situations;

实验室负责人应定期对工作人员进行安全培训教育，并对各种紧急情况下应急措施进行培训；

- In case of occupational exposure, the person in charge of the lab and the person in charge of the discipline should be reported in a timely manner.

若发生职业暴露应及时报告实验室负责人和学科负责人。

4.1. Establishment of warning signs and labels 警告标记和标签的建立

- Mark the experimental work area of different danger levels;

对不同危险程度的实验工作区进行标志；

- A hazard notice should be posted for highly hazardous areas;


对高度危险性区域要张贴危险公告；

- Containers containing dangerous substances must be labeled and their contents should be detailed.

装存危险物质的容器必须贴上标签，其内容应详细。

5. Safe operating procedures 安全操作规程

5.1. Biosafety Lab Personal Protection Procedures 生物安全实验室个人防护规程

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

Appropriate personal protective equipment must be used in the biosafety lab and must be removed and hand washed before leaving the lab. Replacement of protective clothing, gloves, masks and footwear must be sterilized after high-pressure, then cleaned or abandoned. Glasses and masks are soaked and washed with appropriate disinfectant.

在生物安全实验室工作时必须使用合适的个人防护装备，在离开实验室前必须脱掉，并洗手。更换下来的防护服、手套、口罩和鞋套要先经高压灭菌后，再行清洗或废弃，眼镜和面罩用适当的消毒剂浸泡后清洗。

5.2. Biosafety standards for individual behavior 生物安全标准个人行为

In addition to following the general lab safety guiding, the lab user also need to pay attention to the following.

除了遵循实验室一般安全规定外还需注意以下内容：


- It is forbidden to place food, beverages and similar substances in the lab with potential hand-to-mouth contact; it is forbidden to store food in the lab refrigerator (cabinet), unless the material is an experimental material.

禁止在实验室放置食物、饮料及类似的存在有潜在的从手到口的接触途径的其他物质；禁止用实验室的冰箱（柜）储存食物，除非该物料为实验材料。

- Protective work must be done when handling corrosive or toxic substances. Goggles, face shields or other face protection should be used.

处理腐蚀性或毒性物质时必须做好防护工作，应使用护目镜、面罩或其他面部防护用品。

- In the lab work area, white coats or gowns should be worn in the contaminated area, and the clothing should meet the operational requirements of lab equipment.

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

在实验室工作区，污染区应穿白大衣或隔离衣，服装应符合实验室设备操作要求。

- Cleaning and regular disinfection of equipment and facilities, and keep records.

实验服的清洗,应在指定实验室服清洗设备进行清洗，禁止将实验服和沾染实验物品的衣物带离实验区域。

- Shoes that are comfortable, non-slip and protect the entire foot should be worn.

应穿着舒适，防滑并能保护整个脚面的鞋子。

- In the experimental work area, the hair should not sag, avoid contact with pollutants or affect the experimental operation. Ornaments with such danger should be avoided from being brought into the work area; do not leave long beards.

在实验工作区头发不可下垂，避免与污染物质接触或影响实验操作，有此类危险的饰物应避免带入工作区；不可留长胡须。

- Wash hands from the experimental work area into non-polluted areas, wash hands immediately after exposure to contaminants.

由实验工作区进入非污染区要洗手，接触污染物后要立即洗手。


Critical equipment and facilities in the lab (such as, autoclave and biological safety cabinets) should have equipment safety precautions posted next to the equipment.

实验室内关键设备设施（如灭菌锅、生物安全柜）应在设备旁粘贴设备安全注意事项。

- The lab prohibits excessive accumulation of garbage and should be cleaned at least once a day.

实验室禁止堆积过多的垃圾，至少应每日清理一次。

- It is forbidden to store personal belongings in the experimental work area.

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

禁止在实验工作区存放个人物品。

- In the lab designated cleaning and non-cleaning areas, non-Office staff are prohibited from entering the work area.

在实验室指定清洁区和非清洁区，非本室工作人员禁止进入工作区。

- Pipette the liquid and do not use the mouth to absorb it.

用移液器吸取液体，禁止用嘴吸取。

- Reduce spillage and aerosol generation by following lab safety guidelines.

按照实验室安全指引操作，降低溅出和气溶胶的产生。

- Disinfect the work surface at least once a day, and disinfect the active material after it has been spilled.

每天至少消毒一次工作台面，活性物质溅出后要随时消毒。


- All cultures and wastes must be inactivated and autoclaved before being transported out of the lab; Items that need to be removed from the lab for inactivation must be placed in a dedicated closed container.

所有培养物、废弃物在运出实验室之前必须进行灭活，高压灭活；需运出实验室灭活的物品必须放在专用密闭容器内。

- Domestic waste and bio contaminated waste must be stored separately.

生活垃圾和生物污染垃圾必须分开装放。

- Syringes, needles or other sharps should be avoided whenever possible. Used needles and disposable cutters must be thrown into a special lid and bucket for safe handling; the container is not overfilled and the used needles are not allowed to be reused or

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

manipulated by hand.

无论何时都应尽可能避免使用注射器，针头或其它锐器。使用过的针头和一次性切割器必须丢入专门的带有盖子和桶内，以备安全处理；防止容器过满盛装，使用过的针头不许重新使用或再用手操作。

- Broken glass must be placed in a hard container (not by hand) and then placed in a garbage bag.

打烂的玻璃必须放入坚硬的容器（不要用手），然后再放入垃圾袋。

- The bio-hazard symbol is attached to the entrance of the lab. The relevant internal location must be affixed with relevant biohazard information, indicating the risk factor and biosafety level.

实验室入口贴有生物危险标志，内部显著位置须贴上有关的生物危险信息，注明危险因子，生物安全级别。

- Prohibit non-staff people into the lab, or to be allowed to enter after the lab director consent.

禁止非工作人员人进入实验室，或必须经实验室负责人同意后方可进入。

- If experimental strains are involved, personnel need to be vaccinated according to the guidelines of the laboratory manager, and receive vaccinations regularly.

such as: Staff members should receive the necessary immunizations and tests (eg hepatitis B vaccine, BCG) to establish a health record for the staff. Collect essential serum residues for dangerous workers when necessary, and collect serum samples as needed. Reports should be available and promptly disposed of if there is any problem.

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

如涉及实验菌种操作，人员需要接种相应的疫苗则需要根据实验室负责人指引完成接种，并定期接受疫苗注射。

例如：如果工作人员应接受必需的免疫接种和检测（如乙型肝炎疫苗、卡介苗），建立工作人员的健康档案。必要时收集从事危险性工作人员的基本血清留底，并根据需要定期收集血清样本，应有检测报告，如有问题及时处理。

- All personal protective equipment such as protective clothing, gloves, masks and shoe covers (with goggles or masks if necessary) should be worn throughout the operation of the sample, serum or culture, and operated in a biosafety cabinet.

样本、血清或培养物的操作全过程应穿戴实验防护服、手套、口罩和鞋套等个人防护装备（必要时戴护目镜或面罩），在生物安全柜内操作。


- It is best to use an oscillator when mixing. When using a pipette/tip, the aerosol should be minimized.

混匀时最好使用震荡器，使用移液管 / 吸头吹打时，应尽可能减少气溶胶的产生。

- Always wash your hands after removing the gloves. Wash your hands thoroughly with normal soap and water. At high risk, apply sterilization soap for at least 10 seconds before rinsing with water. After washing, wipe your hands with a disposable paper towel or use a hot air dryer.

摘除手套后一定要洗手，通常用普通的肥皂和水彻底洗手，高危时应该用杀菌香皂涂抹至少 10 秒钟后再用清水冲洗。洗后用一次性纸巾擦手或使用热空气干手机。

- Lab equipment must be sterilized prior to shipment for repair or maintenance. Cleaning and regular disinfection of equipment and facilities, and records.

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

实验设备在运出修理或维护前必须进行消毒，设备设施的清洗和定期消毒，以及记录。

- When the person exposes the infectious substance, report it to the lab manager or emergency response team in time, and record the accident passing and treatment plan.

6. 人员暴露感染性物质时，及时向实验室负责人或应急响应小组汇报，并记录事故经过和处理方案。**Biosafety protocol for sample disposal 样本处置的生物安全规程**

All potentially infectious biological factor samples or unknown hazard samples, regardless of source, should always adhere to the principle of comprehensive protection.

对于所有可能潜在传染性生物因子样本或未知危险样本，无论来源如何，应该始终坚持全面防护的原则。


6.1. Sample collection 样本的采集

Operators must wear gloves and wear masks when collecting samples on site. The sample should be packed in a screw cap plastic container of the appropriate size, preferably no more than 2/3 of its volume. The basic information of the sample is written on the label with water-insoluble ink and firmly attached to the outer wall of the container.

现场采集样本时操作人员必须穿戴手套，戴口罩。样本应装在大小合适的螺旋盖塑料容器中，以样本量不超过其容积的 2/3 为佳。将样本的基本信息用非水溶性墨水写在标签上，牢固的贴于容器外壁。

6.2. Transport of samples of the sample/pathogen isolate/bacteria species is carried out in a three-layer package.

样本/病原分离物/菌毒种的运输样品的运输采用三层包装。

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

- The innermost layer is the sample storage tube, which is sealed with a sealing film or tape, and an appropriate amount of absorbent material (such as cotton/absorbent paper) is outsourced.

最内层是样品存放管，用封口膜或胶带密封管口，外包适量有吸收能力的物质（如棉花 / 吸水纸）。

- The second layer is packaged in a double plastic bag or a sealable plastic box. The plastic bag can be sealed with heat, waterproof tape or a zipper.

第二层包装为双层塑料袋或可密封塑料盒。塑料袋可用热力、防水胶带或拉链密封。

- The sealed plastic bag/box containing the sample tube is placed in a three-stage screw cap rigid plastic container filled with an absorbent material. The details of all the samples in the tertiary container, the information related to the sample, the specific address of the carrier and the intended recipient are backed up on a piece of paper and sealed in a plastic bag and taped to the outside of the tertiary plastic container. Transport in refrigerated bags or special transport boxes with obvious biosafety signs. The refrigerated bags and transport boxes carrying the samples must be dedicated.

将装有样本管的密封塑料袋/盒放入三级螺旋盖硬质塑料容器里，周围填充有吸收能力的物质。把三级容器内所有样本的详细情况、与样本有关的信息、运送者及预期接受者的具体地址备份在一张纸上并密封在塑料袋里，用胶带贴在三级塑料容器外面。装入有明显生物安全标志的冷藏包或专用运输箱中进行运输。运送样本的冷藏包和运输箱必须专用。

6.3. Sample reception 样本的接收

Whether the state is normal when the lab receives the sample should be recorded.

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

实验室收到样本时其状态是否正常应记录在案。

6.4. Disposal of samples 样本的销毁

Samples of all completed inspection items are destroyed after being stored for a certain period of time as required.

完成全部检验项目的样本按要求保存一定时间后销毁。

Please refer to the "Lab Hazardous Waste Management Guidelines" for biological waste disposal.

生物废弃物处理请参考“实验室危废管理指引”。

7. Emergency facilities 应急设施

Basic emergency facilities such as first aid kits, suitable fire extinguishers or flameout devices, room disinfection appliances (eg sprayers, formaldehyde fumigation), tools (adsorbent materials and waste containment tools) should be available.

急救箱、合适的灭火器或熄火装置、房间消毒用具（如喷雾器、甲醛熏蒸器）、工具（吸附材料和废物承装工具）等基本应急设施应常备。

The lab should evaluate items with a higher hazard level according to the lab situation and experimental materials, and target the configuration of emergency handling tools and materials.

实验室应根据实验室情况和实验物料，评价危害等级较高的物品，并针对性配置应急处理工具和物料。

	GTIIT_EHS	File No.: GTIIT_EHS_03_07 文件编号:
		Rev. No.: 03 版本号:
		Effective date: 2025-12-01 生效日期:
Document Name 文件名称	Biological Lab Safety Instruction 实验室生物安全操作指引	

8. Relevant records 相关记录

- Health records of lab staff; 实验室工作人员健康档案记录；
- Lab disinfection records; 实验室消毒记录；
- Lab waste disposal records 实验室废弃物处理记录。