2nd Global Genetic Biocontrol Congress

Pre-Congress Course Programme

Principles & practices of biosafety and biosecurity for high containment facilities

***Course facilitators*: Dr. Larbi Baasi & B.Sc. B.A. Rajka Fritsch**

March 17-18, 2025 | Alisa Hotel North Ridge, Accra, Ghana

Organized by: African Genetic Biocontrol Consortium in collaboration with National Biosafety Authority in Ghana

African Genetic Biocontrol Consortium
Build | Inform | Expand

NBA National Biosafety Authority, Ghana

In Partneship with

PAMCA · Africa One Health Network · African Biological Safety Association (AfBSA) · Network of African Science Academies (NASAC) · GeneConvene Global Collaborative · FNIH · Multilateral Initiative on Malaria

Course 003/2/2025: Pre-Congress Course on the Principles & practices of biosafety and biosecurity for high containment facilities

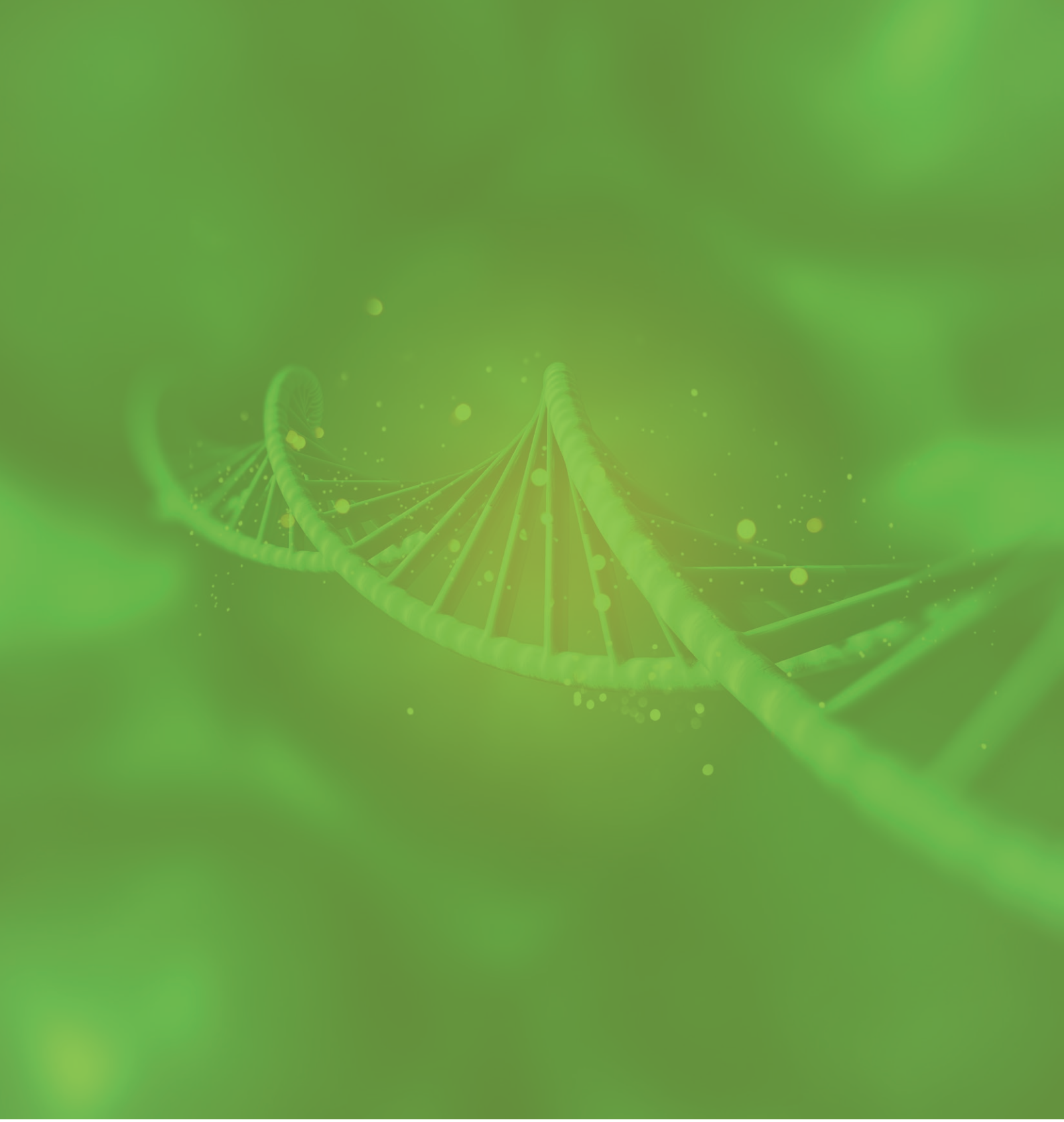
Course facilitators: Dr. Larbi Baasi & B.Sc. B.A. Rajka Fritsch

Venue: Britannia Hall

Course Programme

Day 1	**Monday, March 17, 2025**		
Time	**Topic**	**Speaker**	**Moderator**
08:30 - 09:00 am	Registration		Andrew Kipkoech
09:00 - 09:15 am	Opening remarks	Martin Bundi	Larbi Baassi
09:15 - 09:30 am	Workshop and lecturers introduction	Rajka Fritsch	
09:30 - 10:00 am	Introduction of participants and expectations	All	
10:00 - 10:15 am	Pre-Evaluation		
10:15 - 11:00 am	Presentation 1: Overview of Biosecurity	Larbi Baassi	Rajka Fritsch
11:00 - 11:15 am	Q&A		
11:15 - 11:30 am	Coffee break		
11:30 - 12:15 pm	Presentation 2: Actual overview of relevant standards and guidelines, background and basic requirements	Claus Schweinheim	Martin Bundi
12:15 - 12:30 pm	Q&A		
12:30 - 14:00 pm	Lunch		
14:00 - 14:45 pm	Presentation 3: User Requirement Specification (URS) as first step to define.	Rajka Fritsch	Larbi Baassi
14:45 - 15:00 pm	Q&A		
15:00 -15:45 pm	Presentation 4: Collaboration of trades and biosafety consultants in building projects.	Fabio Blaha	Charles Quaye
15:45 - 16:00 pm	Q&A		
16:00 - 16:15 pm	Coffee break		
16:15 - 16:30 pm	Post-evaluation		
16:30 - 17:15 pm	Group Discussion and summary of results	Larbi Baassi	Claus Schweinheim

Day 2	Tuesday, March 18, 2025		
Time	**Topic**	**Speaker**	**Moderator**
09:00 - 09:15	Pre-Evaluation		Larbi Baassi
09:15 - 09:45	Presentation 5: Preparation of an operation and incident matrix	Rajka Fritsch	
09:45 - 10:00	Q&A		
10:00 - 10:15	Coffee break		
10:15 - 11:00	Presentation 6: Tightness requirements and test methods for different room types	Claus Schweinheim	Larbi Baassi
11:00 - 11:15	Q&A		
11:15 - 12:00	Presentation 7: Biosafety qualification: testing and commissioning and Certification	Fabio Blaha	Claus Schweinheim
12:00 - 12:15	Q&A		
12:15 - 13:45	Lunch		
13:45 - 14:30	Presentation 8: Dual Use Research of Concern (DURC): Challenges and Implications for the African Continent	Larbi Baassi	Rajka Fritsch
14:45 - 15:00	Q&A		
15:00 - 15:45	Presentation 9: Pressure cascading concepts and filter strategies for laboratories	Claus Schweinheim	Larbi Baassi
15:45 - 16:00	Q&A		
16:00 - 16:15	Coffee break		
16:15 - 17:00	Presentation 10: Validation: H_2O_2 decontamination	Rajka Fritsch	Fabio Blaha
17:00 - 17:15	Q&A		
17:15 - 17:45	Post evaluation and Closing remarks	Larbi Baassi	Rajka Fritsch



The African Genetic Biocontrol Consortium

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2nd Global Congress on New and Emerging Genetic Biocontrol Technologies in Accra, Ghana

Pre-Workshop about Principles & practices of biosafety and biosecurity laboratories

Abstract

Presentation 1
Title: Overview of Biosecurity

Speaker: Larbi Baassi Ph.D (Biorisk Management Association of Morocco, [BMAM])

Abstract: This session will provide an introduction to biosecurity, focusing on the principles, technologies, and practices used to protect, control, and ensure accountability for biological materials, equipment, and sensitive information. It explores the eight pillars of biosecurity, with emphasis on inventory control (ensuring accountability without theft detection), information security (protecting sensitive data through classification and network safeguards), personnel management (vetting and training to mitigate insider risks), physical security (layered defenses via detection, delay, and response mechanisms), and transport control (secure logistics and chain-of-custody protocols). By integrating these pillars, laboratories can foster a proactive security environment that balances operational efficiency with rigorous safeguards against biological risks.

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Presentation 2

Title: **Actual overview on relevant standards and guidelines, background and basic requirements**

Speaker: **Dipl.-Ing. Claus Schweinheim (HT Lab Tec GmbH, Germany)**

Abstract: The workshop will present various international standards that GMP- and BSL-3 facilities deal with, such as:

- EU-GMP
- ISO 14644
- WHO Laboratory Biosafety Manual, 4th edition 2020
- Canadian Biosafety Standard, 3rd edition 2022
- BMBL Biosafety in Microbiological and Biomedical Laboratories, Centers of Disease Control and Prevention (CDC) & National Institutes of Health (NIH), 6th edition June 2020
- Recommendation on behalf of the Federal Expert Commission for Biological Safety (EFBS)
- AS/NZS 2243-3, Microbiological safety and containments, edition 2022

The participant will get an overview about the actual existing international requirements for GMP- and BSL-3 laboratories. The aim is to gain knowledge of the international standards and the basic requirements that can be derived from the standards. The workshop deals with the engineering perspective, so that planners, approval authorities and users have a basic idea of which standards apply when planning a laboratory and which requirements should be reflected in the specification. In order to avoid that a project is characterized by just naming various international standards, the participant should be sensitized to focus on requirements.

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Presentation 3

Title: **User Requirement Specification (URS) as first step to define requirements**

Speaker: **B.Sc. B.A. Rajka Fritsch (German LabConCert GmbH, Germany)**

Abstract: The User Requirement Specification (URS) is a crucial first step in the planning and construction of biosafety laboratories. It serves as a structured document that captures user needs, regulatory requirements, and technical specifications to ensure the laboratory design aligns with operational and safety expectations. By defining clear requirements from the outset, the URS minimizes design changes, reduces project risks, and facilitates communication between stakeholders, including scientists, engineers, and regulatory bodies.

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Presentation 4

Title: Collaboration of Trades and Biosafety Consultants in Building Projects

Speaker: M.A. Fabio Blaha (German LabConCert GmbH, Germany)

Abstract: In a more complex building project, the collaboration and understanding mutual of trades, biosafety experts and others, such as fire protection experts, is key to the project success. This is especially true when regional companies take part in the planning, construction and commissioning process, which, on principle has advantages with regard to the future maintenance of the technical facilities and a sustainable laboratory operation. The general concept of biosafety needs to be understood by every trade and the key personnel, thus including basic training courses about biosafety already in the construction project is a good recommendation.

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Presentation 5

Title: Preparation of an operation and incident matrix

Speaker: B.Sc. B.A. Rajka Fritsch (German LabConCert GmbH, Germany)

Abstract: The operation and incident matrix is a key tool for defining control logic in biosafety laboratories, particularly for the HVAC and the alarm system. It systematically maps operational states, failure scenarios, and corresponding automated responses to ensure safe and reliable facility operation. By integrating risk-based considerations, regulatory requirements, and user workflows, the matrix helps to prevent contamination, maintain pressure differentials, and support emergency response protocols. This presentation will outline the fundamental steps in developing a comprehensive operation and incident matrix, including defining key parameters, identifying failure scenarios, and coordinating with interdisciplinary stakeholders. Practical examples will illustrate how a well-structured matrix enhances system reliability, reduces human error, and facilitates validation and commissioning processes.

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Presentation 6

Title: Tightness requirements and test methods for different room types

Speaker: Dipl.-Ing. Claus Schweinheim (HT Lab Tec GmbH, Germany)

Abstract: Different number of relevant national and international guidelines define tightness requirements for different room types, such as:
- GMP laboratories
- BSL-3 laboratories

The presentation will explain the different types of tightness, the purpose and how to measure it.

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Presentation 7

Title: **Biosafety qualification: Testing and Commissioning (T&C) and Certification**

Speaker: **M.A. Fabio Blaha (German LabConCert GmbH, Germany)**

Abstract: Biosafety qualification has the objective to ensure that the planning, construction and commissioning align with and implement the biosafety requirements. Historically, the qualification steps and formal requirements have been developed and applied in the field of GMP (good manufacturing practice), i.e., pharmaceutical production. In recent years, it has become more of a standard in the field of biosafety as well, since a high level of technical requirements necessitate a thorough test plan, following each project phase - design qualification, installation qualification, operation qualification and performance qualification. The objective is to reduce failure costs and the ensure the biosafety laboratory meets the requirements.

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Presentation 8

Title: **Dual Use Research of Concern (DURC): Challenges and Implications for the African Continent**

Speaker: **Larbi Baassi Ph.D (Biorisk Management Association of Morocco, [BMAM])**

Abstract: Dual Use Research of Concern (DURC) presents a significant challenge at the intersection of scientific innovation and global security. While advancements in fields such as biotechnology drive medical and technological progress, they also pose risks of misuse for harmful purposes, including bioterrorism. This session will introduce the concept of DURC and examine how the United States has developed a national strategy to oversee it, with a focus on risk assessment. Additionally, we will explore how Africa can learn from the U.S. experience in DURC oversight, highlighting both opportunities and challenges. The continent's growing research capacity, international collaborations, and potential for strengthened DURC governance offer valuable opportunities to enhance biosecurity and public health. However, challenges such as limited regulatory frameworks, insufficient funding, and gaps in policy enforcement remain significant obstacles. Through case studies and expert discussions, participants will gain insights into balancing scientific advancement with responsible research practices, ensuring that innovation serves beneficial purposes while mitigating potential threats.

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Presentation 9

Title: Pressure cascading concepts and filter strategies for laboratories

Speaker: Dipl.-Ing. Claus Schweinheim (HT Lab Tec GmbH, Germany)

Abstract: According to codes and guidelines for GMP and BSL-3 laboratories are kept under positive or negative pressure by means of a ventilation system. The webinar informs about a successful qualification of a pressure cascading system in the course of detailed tests and issues details about the requirements and approvals of HEPA filter housings used in ventilation systems.

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Presentation 10

Title: **Validation of H_2O_2 Decontamination in Biosafety Laboratories: Planning and Implementation**

Speaker: **B.Sc. B.A. Rajka Fritsch (German LabConCert GmbH, Germany)**

Abstract: Hydrogen peroxide (H_2O_2) decontamination is a critical process in biosafety laboratories, ensuring effective microbial inactivation and maintaining a contamination-free environment. To achieve reliable decontamination results, key aspects must be considered early in the planning phase, including room design, material selection, HVAC integration, and the definition of validation requirements. Proper planning ensures that the facility layout supports effective vapor distribution, that surfaces are compatible with H_2O_2 exposure, and that ventilation systems allow for controlled aeration and residue removal. This presentation will outline essential planning considerations, validation methodologies, and critical process parameters, such as H_2O_2 concentration, exposure time, and monitoring strategies.