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About Genetic Modification Advisory Committee (GMAC)

1. What is Genetic Modification Advisory Committee (GMAC)?

Genetic Modification Advisory Committee (GMAC) is a national-level advisory committee that was established under the purview of the Ministry of Trade and Industry to oversee and to provide scientifically-sound advice on the research and development, production, release, use and handling of genetically modified organisms (GMOs) in Singapore. The Singapore Biosafety Guidelines for Research on Genetically Modified Organisms (GMOs) were developed by the GMAC to ensure the safe containment, handling and transport of GMOs used in research and to provide a common framework for assessment and notification of experiments on GMOs.

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2. What are the research activities that require submission of GMAC proposals?

Submission of GMAC proposals are based on the [Singapore Biosafety Guidelines for Research on Genetically Modified Organisms \(GMOs\)](#). The Guidelines cover experiments that involve the construction and/or propagation of all biological entities which have been made by genetic manipulation and are of a novel genotype and which are unlikely to occur naturally or which could cause public health or environmental hazards. The Guidelines also have provisions for the importation of GMOs and/or GMO-derived products for research purposes.

You may also refer to [ASSESSMENT FLOW CHART ON REGULATORY REQUIREMENT FOR GENETIC MODIFICATION](#) and [FLOWCHART ON REGULATORY REQUIREMENT FOR IMPORTATION/EXPORTATION OF GENETICALLY MODIFIED FISH & LABORATORY ANIMALS](#).

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3. Are both IBC and GMAC approvals required for all GMAC proposals?

IBC approval is required for all GMAC applications (Category A, B & C). GMAC endorsements are required for Category A and B proposals, whereas GMAC notification is required for Cat C proposals.

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4. When can I start my research activity?

Principal Investigators/researchers may commence research work for experiments that are categorised as Category B proposals after approval by Institutional Biosafety Committee, whereas work can only commence for experiments categorised as Category A proposals after approval by Institutional Biosafety Committee and endorsement from GMAC have been received.

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About EHS360 Institutional Approvals – GMAC online application system

5. What are the features of the new online system for the submission of GMAC proposals?

The EHS360 Institutional Approvals - GMAC online application system has the following features:

- One-stop platform for all GMAC applications. Principal Investigator and his/her lab members are able to view and retrieve the GMAC applications and endorsements for their lab in the system.
- Dashboard for easy viewing of the status of application
- Auto-generated emails from the system sent to Principal Investigator and Requester to notify about the status of application, including submission, IBC approval, GMAC endorsement, etc.
- Easy retrieval of the IBC-endorsed GMAC proposal and GMAC endorsement from the system
- Hassle-free submission of amendments through the system
- Notification on expiring GMAC endorsements

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6. What are the different roles in the system?

These are the following roles in the system:

Roles	Submits GMAC application	Views status of application	Reviews GMAC proposals	Retrieves IBC-endorsed GMAC proposals & GMAC endorsements	Submits amendment to registration	Submits GMAC extension form (renew expiring GMAC endorsements)	Delete forms or make amendments to previously submitted form
Lab members in Principal Investigator's lab	√	√	N/A	√	√	√	N/A
Principal Investigator	√	√	N/A	√	√	√	N/A
Reviewer (OSHE staff)	N/A	√	√	√	N/A	N/A	N/A
GMAC Administrator (OSHE staff)	N/A	√	√	√	N/A	N/A	√

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7. Who can submit applications?

Any NUS staff and student in the Principal Investigator's lab can submit the application. Please refer to the [User Guide](#) for step-by-step guidance on submission of the application.

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8. I have made an error in the content during submission. What do I do?

Please seek advice from your Safety and Health Officer assigned to the faculty/school/department or GMAC Administrator. You do not need to resubmit the proposal.

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9. How will I be informed when the application has been approved/endorsed?

You will receive an auto-generated email from the system and you may retrieve the approved proposal form from the EHS360 system.

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10. How can I retrieve/download the IBC-endorsed GMAC proposal form and endorsement from GMAC from the system?

You will be able to download the IBC-approved form and the GMAC endorsement upon receiving the system generated email. Please logon to EHS360 and follow this path EHS360 ->Institutional Approvals -> Select proposal ID -> Scroll to the 'For Official Section only'.

You will be able to retrieve the documents under 'Upload IBC-approved GMAC proposal/GMAC endorsement or Notification/Other documents'. Please refer to the [User Guide](#).

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11. I am a lab member can I retrieve the GMAC endorsement for my lab?

Yes, you can. All GMAC proposals for the lab will be visible to you. Please refer to [User Guide](#) for Retrieval.

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12. My co-researcher has left NUS, however, I would like to extend the GMAC for my work. What do I do?

You will be able to apply for amendment/extension for all protocols under the same lab group. Please refer to [User Guide](#).

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13. Where can I see all of my GMAC applications?

Please log in to EHS360 and you will be able to see all GMAC applications for your lab under the tab 'Institutional Approvals'. Please refer to [User Guide](#).

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14. How do I know which of my GMAC endorsements are still valid?

You will be able to view the status of all your GMAC applications on the dashboard under 'Institutional Approvals'.

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15. How will I know when the GMAC endorsements have expired?

Principal Investigators will receive an email notification from the system that the GMAC endorsement will be expiring in 30 days.

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16. Who do I contact for GMAC-related queries?

Please contact your Faculty/School/Department Safety and Health Officer or the GMAC Administrator, Dr Sheela Reuben (oshrsh@nus.edu.sg / 66011724).

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About Licence to Possess Veterinary Biologics (LPVB)

1. What is Licence to Possess Veterinary Biologics (LPVB)?

Licence to Possess Veterinary Biologics (LPVB) is a licence administered by Animal & Veterinary Service (AVS) at National Parks Board (NParks), for the possession and use of animal pathogens (veterinary biologics).

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2. What is NUS institutional LPVB?

The National University of Singapore has been granted an institutional licence to possess Risk Group 2 veterinary biologics (research and development purposes) on 1 April 2013 by Agri-Food & Veterinary Authority (AVA) of Singapore, under the Animals and Birds Act (Chapter 7).

With effect from 1 April 2019, the Agri-Food & Veterinary Authority of Singapore (AVA) has been restructured to form Singapore Food Agency (SFA) and the Animal & Veterinary Service (AVS) under National Parks Board (NParks), and the NUS institutional Licence to Possess Veterinary Biologics is regulated under NParks/AVS.

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3. What are the activities that require registration under the NUS institutional LPVB?

NUS researchers who plans to import, store and handle Risk Group 2 veterinary biologics on NUS Kent Ridge Campus must register under the NUS institutional licence. The institutional licence covers Risk Group 2 veterinary biologics in the Select List, and includes organisms / registered vaccines / proteins / peptides / other genetic materials of Risk Group 2 veterinary biologics.

Please refer to the Select list in the AVS website: <https://www.nparks.gov.sg/avs/pets/bringing-animals-into-singapore-and-exporting/veterinary-biologics/licence-to-possess-veterinary-biologics>

If you are working with a known animal pathogen or zoonotic agent not found on the Select list, please contact the LPVB Administrator. OSHE will assist to clarify with NParks/AVS whether the agent is an animal pathogen/zoonotic agent regulated by NParks/AVS.

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About EHS360 Institutional Approvals – LPVB online application system

4. What are the features of the new online application system for registration of Risk Group 2 veterinary biologics?

The EHS360 Institutional Approvals – LPVB online application system has the following features:

- a. One-stop portal for the application and depository of documents pertaining to the registration, including information on veterinary biologics, approval letters, etc.
- b. Dashboard for easy viewing of the status of application
- c. Auto-generated emails from the system sent to Principal Investigator and Requester to notify about the status and approvals
- d. Easy retrieval of the approval letters from the system

- e. Hassle-free submission of amendments through the system

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5. What are the different roles in the system?

Roles	Submits initial application	Endorses initial submission	Views registration	Retrieves OSHE's approval letter	Submits amendment to registration
Lab members in Principal Investigator's lab	√	N/A	√	√	√
Principal Investigator	√	√	√	√	√
LPVB Administrator (OSHE staff)	N/A	N/A	√	√	N/A

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6. I have previously registered my Risk Group 2 veterinary biologics under the NUS institutional LPVB. Do I need to submit a new application using the new EHS360 Institutional Approvals – LPVB online application system?

No, you do not need to submit a new application if your veterinary biologics have previously been registered under the NUS institutional LPVB. We are pleased to inform that your previous registration and documents have been entered into the system. You may retrieve the information/letters of approval or submit an amendment (new Risk Group 2 veterinary biologics, new premises, etc.) through the system.

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7. Who can submit the initial registration and subsequent amendments?

Any NUS staff or NUS student in the Principal Investigator's lab, including the Principal Investigator, can submit the application. Please refer to the [User Guide](#) for step-by-step guidance on submission of the application.

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8. I have made an error in the submission of the registration form. What do I do?

Example 1: I need to include additional information into the registration form

Please inform your Principal Investigator immediately as the Principal Investigator can make changes to the submission.

If your Principal Investigator has already approved the submission, please contact the LPVB Administrator, who will amend the submission on your behalf.

Example 2: I submitted a registration form by mistake

Please contact the LPVB Administrator who will assist to delete the submission.

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9. How will I be informed when the application has been submitted and approved?

You will receive a system-generated email

- a. After submission;
- b. After PI approves the submission; *and*
- c. After OSHE approves the registration under the institutional licence.

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10. How can I retrieve the approval letter?

You may retrieve the approval letter from the Institutional Approval module under LPVB after receiving the system-generated email. Please logon to EHS360 and follow this path: EHS360 ->Institutional Approvals-> Scroll to the 'For Official Use only'.

Please refer to the [User Guide](#).

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11. I am a Principal Investigator and I unable to view the submission made by my lab member. How do I proceed?

Please ensure the following:

- a. Requester (lab member) clicks the submit button (not "save as draft" button); *and*
- b. Both Requester and Principal Investigator receive the auto-generated email that notifies on the submission.

Please contact the LPVB Administrator if there are further issues.

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12. What can I expect after the registration form has been submitted to OSHE?

The LPVB Administrator will be emailing you shortly to arrange for a laboratory inspection.

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13. Who do I contact if I have any queries on veterinary biologics or EHS360 Institutional Approvals – LPVB online application?

Please contact the LPVB Administrator, Dr Christine Hu (oshchz@nus.edu.sg / 6601 2263).

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