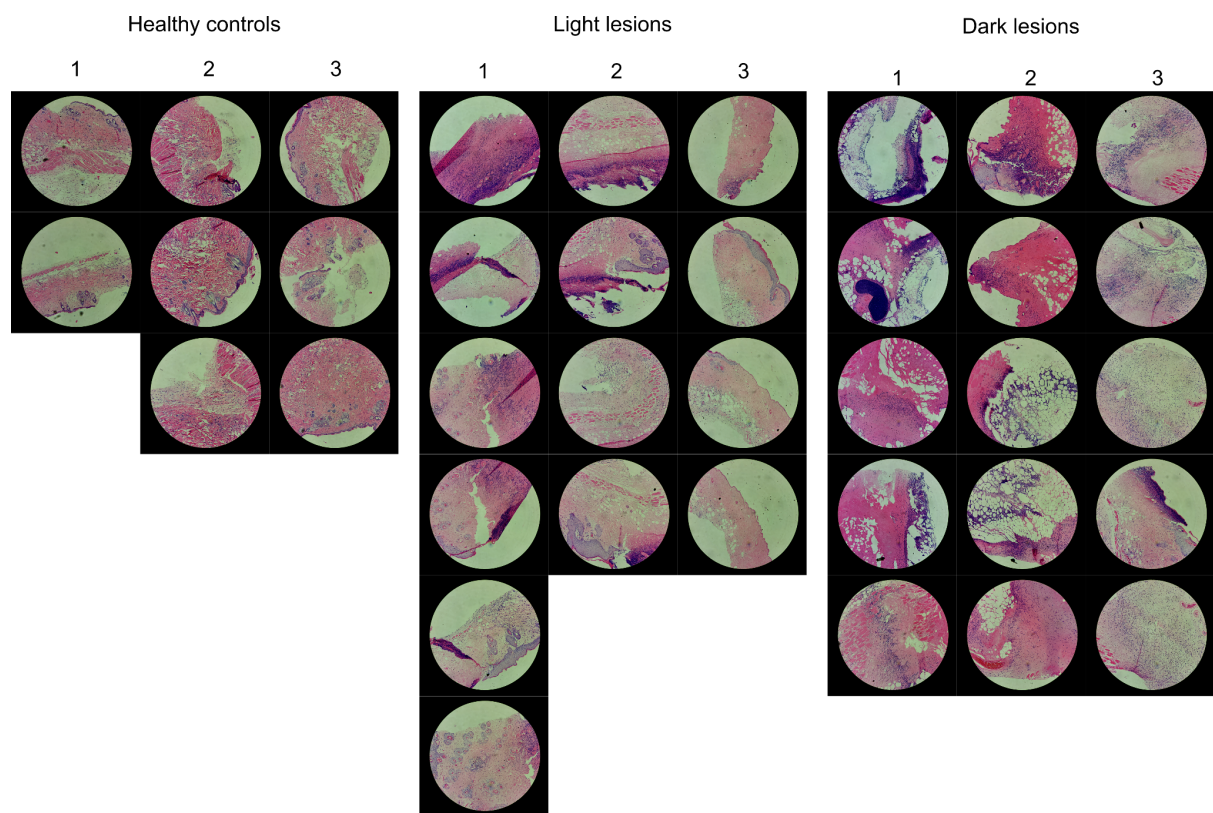# Machine-learning guided Venom Induced Dermonecrosis Analysis tooL: VIDAL

**Supplementary material**



**Supplemental Fig. 1 All images of H&E-stained tissue samples used to quantify the %-dermonecrosis within each skin layer.** Images are 100x-magnified. Three tissue samples were chosen that exhibited either no necrosis (Healthy controls, left), large but light skin lesions (Light lesions, middle), and large and dark lesions (Dark lesions, right). Each number represents a different experimental animal.
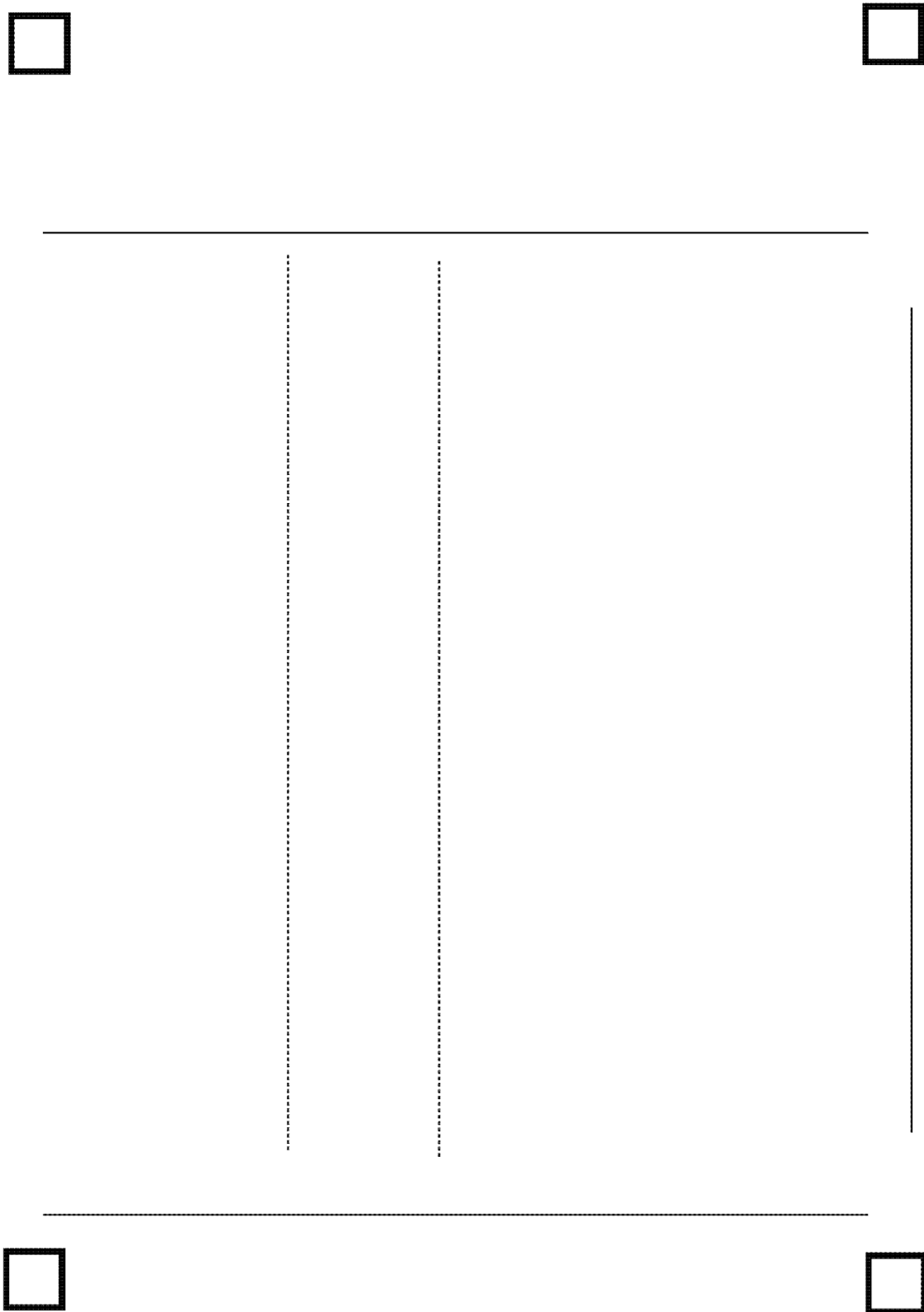
**Supplemental Fig. 2. A4 printout template to be used for dermonecrosis assays. This template is key, since it allows the tool to optimise scaling and better segment the lesions.**
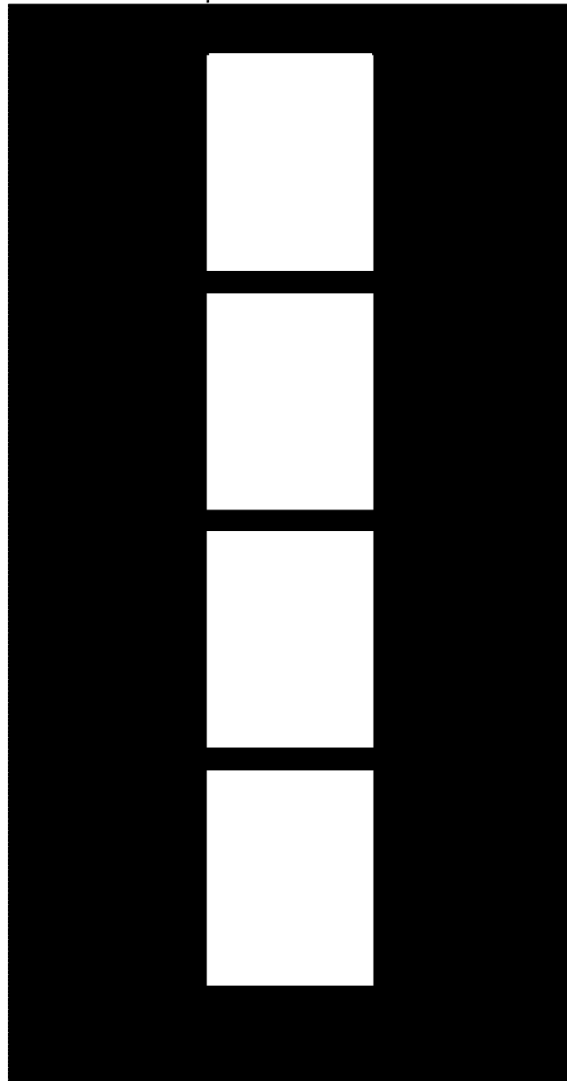
**Supplemental Fig. 3. A4 mask sheet to be used for dermonecrosis assays. This is to be placed on top of the mice, so each lesion is within one of the white cut-out boxes.**

# Machine-learning guided Venom Induced Dermonecrosis Analysis tooL: VIDAL

## Standard Operating procedure

This document is meant to provide an easy-to-follow and step-by-step guide on how to perform dermonecrotic analyses using the VIDAL tool.

Materials
1. Print out template sheet (supplementary Figure 1)
2. Print out cover sheet (supplementary Figure 2)
3. Internet connection
4. Camera (e.g., phone)

Approach
1. To start with, place the euthanised mice or the excised lesion on the indicated lines of the template sheet (no more than four mice/lesions).
2. Place the black cover sheet on the mice/lesions, so that you have black boxes outlining the lesions. This helps the algorithm identify the lesions.
3. Ensure that all the black squares in each of the template sheet's corners are not covered and that you have as even lighting as possible. Aim to also minimise reflections on the lesions.
4. Take a photo of the sheet from above trying to avoid any tilt and so that each of the sheet's corners is equidistant to the camera.
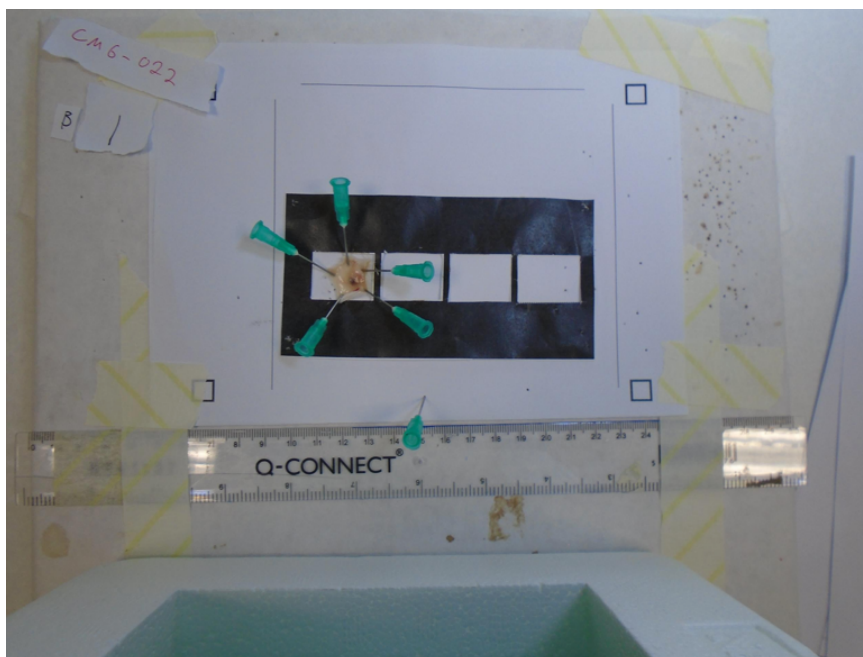
5. For ease of use it is recommended to transfer the image(s) to your computer, but you can also continue the analysis on your phone.
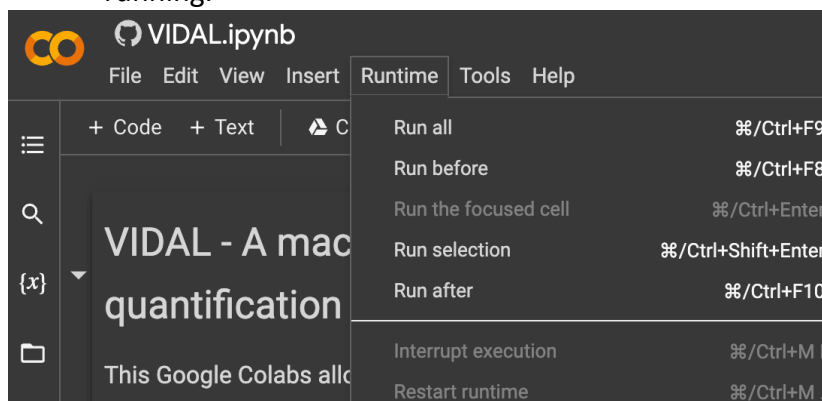6. Open a browser window and follow the link to the tool: https://github.com/DTU-Bioengineering/VIDAL
7. Click the "Open in Colab" tab.



8. Now select "Runtime->Run all" and wait for each command cell (1-3) to finish running.



9. Once completed, click the url link the final line (e.g., https://aha-4030.loca.lt).



10. On the next page select "Click to continue"
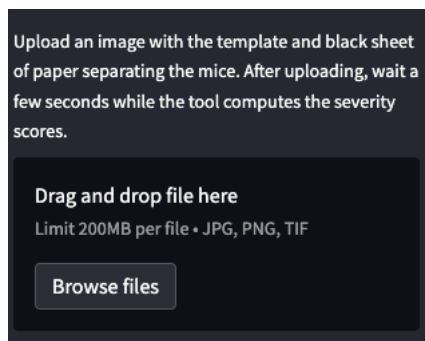
# nerd-29015.loca.lt

**Friendly Reminder**

This website is served via a localtunnel. This is just a reminder to always check the website address you're giving personal, financial, or login details to is actually the real/official website.

Phishing pages often look similar to pages of known banks, social networks, email portals or other trusted institutions in order to acquire personal information such as usernames, passwords or credit card details.

Please proceed with caution.

**Click to Continue**

11. On the next page, upload your image as jpg, png, or tif (note: if your image is a jpeg instead of a jpg the tool might not recognise it. In that case just convert your image via one of the many free online image converters). You can also use the example image provided in the github folder, if you just want to try the tool.

Upload an image with the template and black sheet of paper separating the mice. After uploading, wait a few seconds while the tool computes the severity scores.

**Drag and drop file here**
Limit 200MB per file • JPG, PNG, TIF

**Browse files**

12. After uploading your image, wait a few sections you will be prompted to click on each of the lesions you want analysed (white dot). Afterwards just click compute.

# AI-assisted Necrosis Analysis

1. Upload a photo to analyize using the 'Browse files' button the left.

2. Click on each lesion in the image. There should be a single white dot on each lesion you want a necrosis score computed.

3. Press the 'Compute' button below to calculate the average necrosis score for the selected lesions. Individiual lesion scores are also dis[
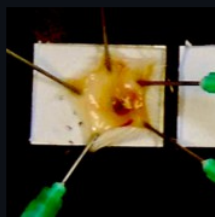
Compute
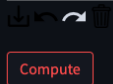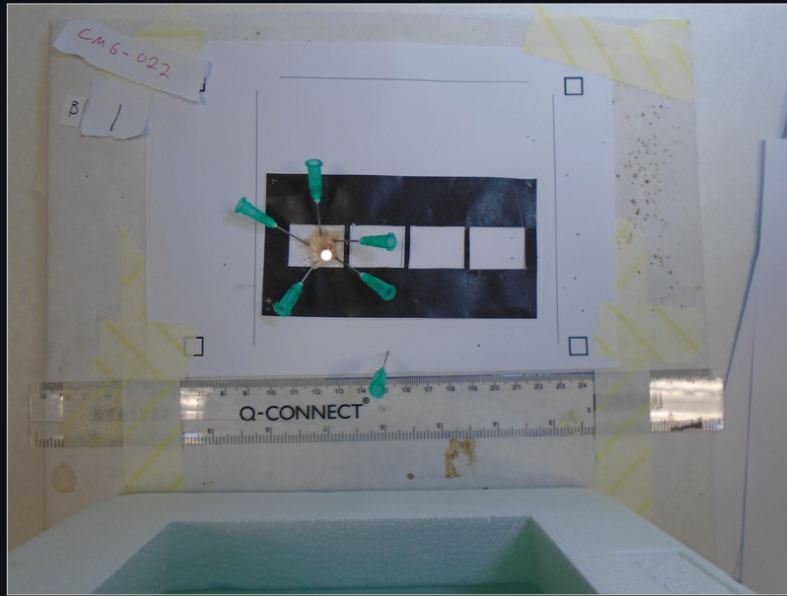
13. After a short time you should be presented with the following output, as well as a white balanced version of your image.

**Necrotic unit**
## 46.17

**Light area**
## 19.92 mm²

**Dark area**
## 13.00 mm²

NU: 46.17

Light area: 19.92 mm², Dark area: 13.00 mm²