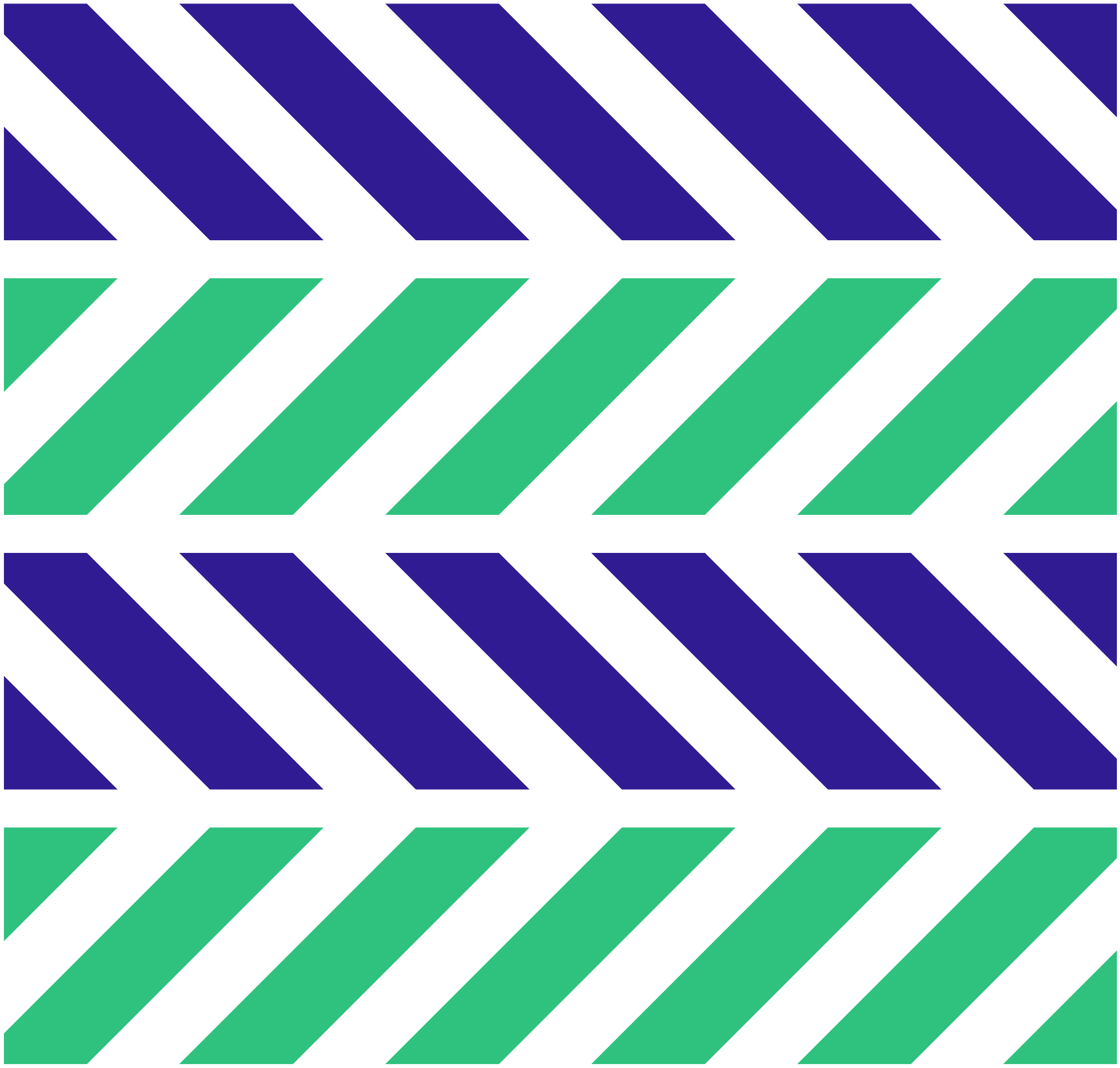
Biodose Tools

User Manual & Documentation

Alfredo Hernández



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Contents

About

This project in an app to be used by biological dosimetry laboratories. Biodose Tools is an open-source project that aims to be a tool to perform all different tests and calculations needed. The app is developed with R (R Core Team, 2019) together with Shiny (Chang et al., 2019) to offer an on-line, easy-to-use solution. Although the intention is to provide the application as a website, all R routines can be downloaded for improvement or personal use.

We also aim to clarify and explain the tests used and to propose those considered most appropriate. Each laboratory in its routine work should choose the optimum method, but the project aims to reach a consensus that will help us in case of mutual assistance or intercomparisons.

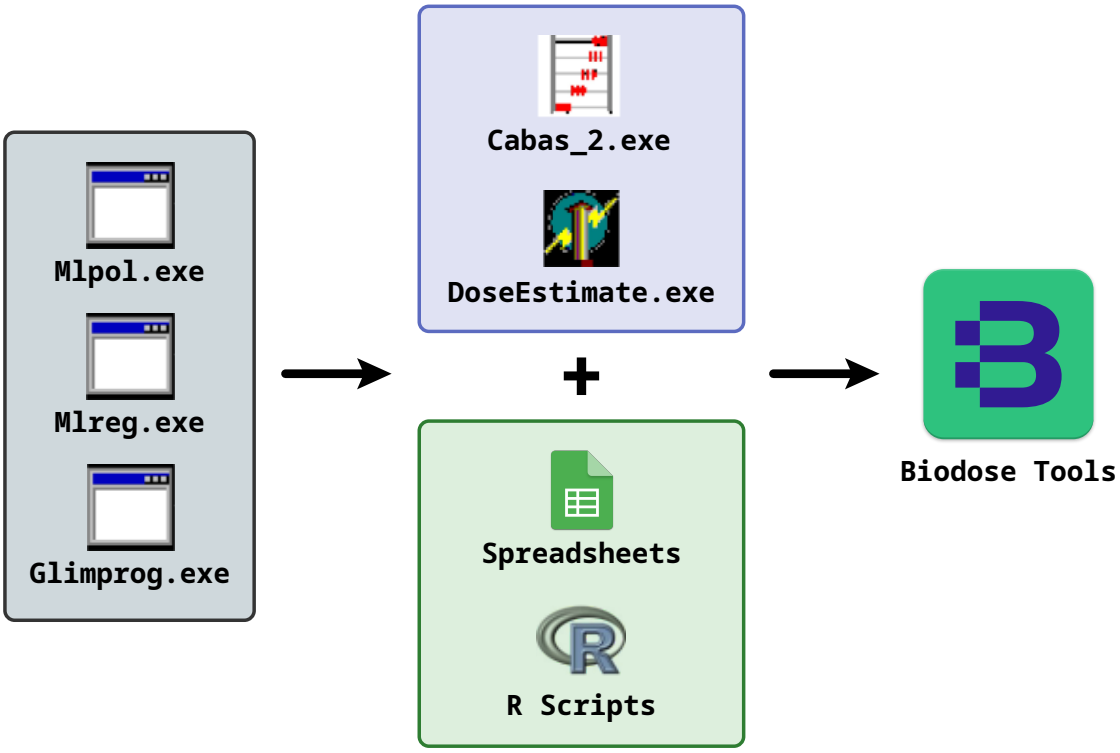
The project is initially developed by RENEB association, but contributions are always welcome.

Structure of the book

Acknowledgements

About the authors

Background and goals



Part I.

Using Biodose Tools

Chapter 1. Getting Biodose Tools

1.1. Online

During the beta testing phase, the application is hosted on Shinyapps.io: https://aldomann.shinyapps.io/biodose-tools-beta/

1.2. On RStudio

This is a work in progress.

The application can be easily installed by runnning

```
install.packages("biodose-tools")
```

Alternatively, if you want to download the development version, you can just run

```
devtools::install_github("biodosimetry-uab/biodose-tools-package")
```

Chapter 2. Usage

2.1. User interface

We describe our methods in this chapter.

Part II.

Statistical Methods

Chapter 3. Introduction

Here is a review of existing statistical methods for the different implemented modules, i.e.,

- Dicentric analysis
- Translocation analysis

The primary objective of this section is to provide biologists with technical information about the statistical methods and tests used on Biodose Tools.

Chapter 4. Dicentric analysis

4.1. Dose-effect curve fitting

4.2. Dose estimation

Chapter 5. Translocation analysis

5.1. Dose-effect curve fitting

5.2. Dose estimation

Chapter A. Implementation details

The Biodose Tools user interface is written in (Chang et al., 2019) using Bootstrap 4 (Granjon, 2019), analyses are implemented in the R programming language (R Core Team, 2019), with the resultant tables and plots rendered in HTML through JavaScript libraries. This is done by the browser of choice (Google Chrome, Firefox, Microsoft Edge, and Safari are officially suppored), or by an instance of QtWebKit if the app is run through RStudio.

References

Chang, W., Cheng, J., Allaire, J., Xie, Y., and McPherson, J. (2019). *shiny: Web Application Framework for R*. R package version 1.3.2.

Granjon, D. (2019). *bs4Dash: A 'Bootstrap 4' Version of 'shinydashboard'*. R package version 0.3.0.

R Core Team (2019). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria.