RESEARCH DATA MANAGEMENT PLAN

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| PROJECT | | | | | | | | | |
| Title | **Statistical Analysis of the Inner Ear** | | | | | | | | |
| Description | This study looks to quantify spatial and temporal inflammation-induced changes in the capsular permeability and macrophage infiltration in guinea-pig cochlea using MRI. Modeling of such exchanges in blood and different inner ear (IE) compartments require the analysis of a substantial amount of data.  This data has been extracted from a set of MRI which measures the propagation of a contrast agent injected into the IE. This project looks at the parsing and statistical analysis of these results.  This project could provide reference data that can be used to quantitatively assess the treatment of auditory disease in animal models and establish a platform from which such techniques can be transferred into clinical practice. | | | | | | | | |
| Field of Research | Audiology; 1702 - Cognitive Science; Image Processing | | | | | | | | |
| DMP created | | | Last updated | | Project start | | | Project end | |
| 2016/08/11  20:00 | | | 2016/10/14  08:23 | | 2016/07/18 | | | Ongoing | |
| PROJECT CONTRIBUTORS | | | | | | | | | |
| Role | | Name | | Affiliation | | Email | Username | | ORCiD ([*i*](http://www.library.auckland.ac.nz/services/research-support/orcid)) |
| Data contact/ Supervisor | | Jerome Plumat | | Faculty of Medical and Health Sciences | | [j.plumat@auckland.ac.nz](mailto:j.plumat@auckland.ac.nz) | j.plumat | | 0000-0001-5068-1674 |
| Development Team | | Bibiana Lee | | Faculty of Medical and Health Sciences | | slee925@aucklanduni.ac.nz | slee925 | | 0000-0001-8766-7294 |

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| POLICIES & GUIDANCE | | |
| Related policies | This project shall be conducted and completed following the policies outlined in the [Researcher Code of Conduct](https://www.auckland.ac.nz/en/about/the-university/how-university-works/policy-and-administration/research/conduct/code-of-conduct-policy.html) | |
| FUNDING (if applicable) | | |
| Funding agency | Vice Chancellor’s Strategic Development Fund (University of Auckland 2015) | |
| Funding ID | n/a | |
| Research Office ID | n/a | |
| ETHICS & PRIVACY | | |
| Ethics requirements | All experimental procedures described in this study were approved by the University of Auckland Animal Ethics Committee. | |
| How will you manage any ethical issues? | Although there are no foreseeable ethical issues, should there be any issues, they will be reported to the Animal Ethics Committee (AEC).  These issues will then be addressed following the recommendations outlined by the AEC.  Further information regarding procedures or processes can be found [here](https://www.staff.auckland.ac.nz/en/research/funding-and-ethics/applying-for-ethics-approval-and-ensuring-biological-safety/animal-ethics1/after-animal-ethics-approval.html#reporting). | |
| Are there other privacy and/or security requirements? | No | |
| DATA ORGANISATION | | |
| Data collection/ creation | | |
| What data will you create/ collect? | Text file with the MRI measures for the propagation of a contrast agent injected into the Inner Ear (IE).  Each file is around 7 kilobytes in size and in total there are 200 files making the dataset around 1.4 gigabytes. Each file is labeled according to a specific ID. The file name gives the animal ID and the day it has been imaged. Example: 13D4 is the animal 13 imaged days 4 after LPS treatment.  The text file will contain unstructured values for inputs (time after fixed captures in seconds and arterial input function values) and outputs (K trans value, pixel enhancement averages along time, pixel enhancement STD value along time and values for the diffusion coefficient) – these have been explained in the readme file. | |
| How will the data be collected/ created? | The experiments were undertaken on 3- to 5-week-old guinea-pigs of either sex supplied by the animal facility at the University of Auckland  For all experiments, cochlear inflammation was induced by the transtympanic injection of bacterial lipopolysaccharide (LPS).  Guinea-pigs were sensitized intraperitoneally (i.p.) with LPS (0.01% w/v, 0.8 mg/kg, Escherichia coli serotype 055:B5 followed by bilateral intra-tympanic injection of LPS (1% w/v, 30 mL/tympanum) 24 h later under isoflurane anesthesia (5% induction and 2–2.5% maintenance in oxygen). To study the changes in vascular permeability LPS treated guinea-pigs were scanned at 4, 7 and 10 days after treatment.  Control guinea-pigs were either untreated or were injected with saline (2 mL, i.p.) followed by bilateral intra-tympanic injection of saline (30 mL/tympanum) 24 h later. Control untreated guinea-pigs were scanned at day 0 and saline treated guinea-pigs were scanned at 4, 7 and 14 days after treatment  All time points in this study are defined relative to intraperitoneal injection of LPS or saline (day 0). | |
| What non-digital data/assets will you create/ collect? | N/A | |
| File management | | |
| How will the data be organised? | Data will be organized in a folder called “Medsci 736–Inner-ear-Data” on a university issued laptop.  The data files are organized according to a specific ID. The file name gives the animal ID and the day it has been imaged. Example: 13D4 is the animal 13 imaged day 4 after LPS treatment. | |
| Storage locations | | |
| How will the data be stored and backed up during the research? | The data will be stored using a physical computer, a Google Drive Folder under the username slee925 and a [Github repository](https://github.com/BibianaLee/BibianaLee-medsci736) for the duration of the research.  Data will be updated and backed up on a weekly basis on all three of these storage locations until the completion of the project. | |
| METADATA & DOCUMENTATION | | |
| What documentation and metadata will accompany the data to support its discovery, (re)use and increase impact? | A readme file will be created to accompany the dataset.  This file will include a brief description of the project like the one outlined in this plan, software version numbers and instructions so that users can get a copy of the project running on their local machines for development and testing purposes. This project in particular used Python 2.7.12 and python data analysis library Pandas version u'0.18.1 in order to parse, structure and analyse the large datasets obtained during the project.  Visualisation of the project data was achieved using a plotting library called matplotlib 1.5.3  Outputs of the software are also listed in the readme file. These are:   * Graphical and visual outputs (for example: the average along the animal of cc. along the time for each regions) * Statistical metrics (for example: p values) to illustrate the differences between the two classes. | |
| Spatial extent | N/A | |
| Temporal extent | N/A | |
| Links | https://github.com/UOA-MEDSCI-736/BibianaLee-medsci736/blob/master/README.md | |
| OWNERSHIP, COPYRIGHT & IP | | |
| The copyright and other IP is owned/held by: | | Yes or leave blank |
| The University of Auckland (normal situation for research undertaken by university staff) | | Yes |
| The student (research by research student in the normal course of study, which does not fall into any of the other categories.) | | Yes |
| Joint ownership (research conducted in collaboration: copyright and IP ownership are documented in an agreement between the organisations) | |  |
| Third party data (data owned by third party or generated under UniServices agreements. | |  |
| If ownership *is* jointly held, third party or generated under UniServices contract. |  | |
| ACTIVE DATA - SHARING & ACCESS CONTROL | | |
| Access to the data during the project will be: | Access to datasets will be restricted to Jerome (owner) and the development team (Bibiana). Access to data can be extended to parties with consent from the owner and will be kept on a University of Auckland issued laptop. | |
| How will you manage access and security? | Data will be password protected on a laptop. If shared it will be done so in a manner which will not compromise its security. | |
| RETENTION & DISPOSAL | | |
| Data must be retained after submission of thesis or publication of results for a minimum of: | | (select) |
| 6 years (standard minimum retention after last publication based on data) | | 6 |
| 10 years (for medical research involving clinical trials from the end of the trial) | |  |
| Until patient reaches 26 years of age, and at least 10 after last treatment (for clinical research involving children) | |  |
| 21 years from the date of filing a patent related to this research | |  |
| Other specified time | |  |
| Details of other time |  | |
| Based on the above, data must be kept until at least | | 2022/ 11/ 14 |
| DATA PUBLISHING AND DISCOVERY | | |
| Licencing | **ATTRIBUTION-SHAREALIKE** | |
| Outline how data will be prepared and where it will be published. | How and where the data will be published is still yet to be determined. For the purposes of this course, MEDSCI 736, the data will be prepared and published according to course regulations and guidelines as well as a final assignment document | |
| LONG-TERM ARCHIVE / PRESERVATION (20+years, if applicable) | | |
| What is the long-term preservation plan for the dataset? | Long term preservation of this dataset is dependent upon its appraisal in years to come. This will most likely be done in collaboration with the University of Auckland Library. Digital preservation of the dataset will be left up to the owner Jerome Plumat. For the purposes of this project, long term preservation will entail hard drive and cloud storage. Data integrity will be ensured through selecting sustainable file formats or continuous review and updating in years to come. | |

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| RDM/DMP RESPONSIBILITIES & RESOURCES | |
| Who will be responsible for data management? | Data management which includes but is not limited to metadata production, data quality, storage and backup, data archiving and data sharing will be done by Bibiana Lee during the duration of the project.  Bibiana Lee will also ensure that the relevant policies are respected.  Upon the completion of the project, these duties and responsibilities will be transferred to Jerome Plumat |
| What resources will you require to deliver your plan? | The completion of this plan will require a hard drive, google cloud storage, software and further training |

References and thanks to:

DCC. (2013). Checklist for a Data Management Plan. v.4.0. Edinburgh: Digital Curation Centre. Available online: http://www.dcc.ac.uk/resources/data-management-plans