# Development of a Computer Aided Learning Tool for Immunology "LIME" – Learn Immunology More Easily" Dr K. Allenspach, Dr B. Catchpole, Mr N. Short & Prof D. Werling

# Justification

The RVC curriculum is currently shifting away from didactic teaching to a more studentcentred, active learning approach. This is reflected in the new curriculum where independent study is being encouraged to promote self-directed and self-motivated learning. In immunology there is the potential to use other teaching methods, such as elearning, to support this change in practice.

One of the most complex and difficult tasks is the teaching of basic immunological concepts. Despite the collaboration of colleagues from different disciplines in the teaching process, students still find the topic very challenging. This is also true for postgraduates studying towards specialisation in veterinary pathology, which encompasses immunology as a discipline, where a higher degree of knowledge is required.

An additional major problem in delivering "engaging" immunology lectures is the fact that much of our current knowledge is based on data obtained in the murine or human model. Both models are of value in understanding basic concepts, but are not very appealing to the veterinary orientated student.

#### Objectives

This project was proposed to support the development of a computer aided learning tool to strengthen the teaching of veterinary immunology at the RVC. To do this the project set out to develop a unique set of online immunological resources to help students "*Learn Immunology More Easily*". These were developed to enable students to use them at their own pace to supplement traditional didactic teaching in order to foster a deep learning approach to complicated functional subjects in immunology.

The project's main objective was to draw on a range of existing open educational resources in order to create a logical, educational valuable and media rich learning experience. This included a German CD based immunology program, internal lecture notes and other relevant websites. The content was integrated with e-assessment resources including multiple choice and flash card assessment to encourage students to explore the content more thoroughly.

The final component of the project was to conduct a small research project to analyse the value of the LIME resources for BSc VetPath students.

## Methodology

The first phase of the project involved reviewing the existing content available to create LIME and determining how this could most effectively be constructed as a pedagogically valuable resource. The RVC already has some excellent teaching resources which were considered to be appropriate for inclusion. This included descriptive diagrams, images, PowerPoint's. In addition the project had the rights to use and translate a comprehensive

veterinary immunology CD produced in German with the involvement of one of the Team Members (D. Werling). Once the content had been reviewed, it was possible to generate a content map describing the structure of the site (Diagram 1).



Diagram 1 – Structure of LIME site

This structure was then further broken down into a number of secondary content maps describing different sections of the immunological system with individual topics identified. These content maps made it relatively straightforward for the Team Members to review design and progress with the project. They also enabled authoring to be allocated to individual students without the risk of duplication or omission.

In order to coordinate the project over the summer of 2008, a recent RVC graduate Jenny Saunders was employed on a casual basis. She was responsible for overseeing the work on the site, training new student authors, reporting to the Team Members and initial editing.

To carry out the authoring of content, it was agreed by the Team to employ a small group of 2<sup>nd</sup>/3<sup>rd</sup> year BVetMed students who had already studied immunology so were familiar with the taught curriculum. This choice was also for expediency as it was apparent that a lot of work needed to be completed and academic staff did not have the time to do this. In total 4 students were employed including one German speaking student (to review the CD) and one Nottingham student (to compare content and teaching).

In authoring the content, students were provided with some standard guidance on writing style, sourcing and attribution of images, cross linking, adding references and plagiarism. The intention was to produce a comprehensive page of content on each topic drawing on published literature and lecture notes. Wherever possible this content was illustrated with images and diagrams from acceptable sources (eg <u>www.cellsalive.com</u>). Key references were added in some places and deep links to CAB abstracts for further reading.

To address self-directed learning a series of interactive flash cards were developed which students could use to test their understanding of key topics – they could then click through to further information where necessary. In addition in some places MCQs and drag and drop activities were also developed.

The original intention had been to add the resource to the RVC Blackboard site. However, it was agreed by the Team Leaders that as there was no other veterinary immunology resource quite like this on the web, it would be important and prestigious to share it with students externally too. It was therefore decided to publish through the WikiVet site which is widely used by veterinary students with the understanding that all the content was licenced as <u>Creative Commons Attribution Non-Commercial No-Derivatives 3.0 License</u>. This also allowed the content to be effectively cross linked within WikiVet facilitating search and categorisation.

All content was marked as having been peer reviewed (by graduate authors) but was passed to the Team Members for expert scrutiny.

No impact research on the use of the content has yet been completed.

## Outcome

Work on the project started in July 2008 and carried on actively until September 2008. Subsequently the site has been updated and improved as part of other developments taking place across WikiVet.

The student authors effectively produced over 100 topics covering almost all the key areas of the undergraduate curriculum. These were generally of a high standard though all had to be reviewed by the graduate coordinator. A print out of a sample page is attached showing the range of resources. This is now probably the largest dedicated veterinary immunology resource on the internet.