INTRODUCTION

Parasitologists from different European Universities [De Montfort University, DMU, UK and the University of San Pablo CEU (USP-CEU) and Miguel Hernández de Elche] are developing a complete on-line package for teaching and learning medical parasitology, named DMU e-Parasitology, which is accessible at: http://parasitology.dmu.ac.uk (Fig. 1). This novel package includes a virtual laboratory and microscope with a complete library of digitised 2D slides of parasites in clinical samples.

AIM

To developing a complete on-line package for teaching and learning medical parasitology through 2D and 3D images included in e-learning units from DMU e-Parasitology.

RESULTS

The 3D z-stack slide displaying cysts of Acanthamoeba spp. can be accessed: http://parasitology.dmu.ac.uk/learn/3D_Parasitology_Acanthamoeba_cyst_1.htm (Fig. 5) In contrast to images created for pre-stained clinical samples, in which structures of the parasites were indistinguishable from the background as described previously, an insight of the morphological structure of the infective forms of the parasites could be seen in the 3D z-stack images in each fixed culture samples provided.

METHODS

We have been successful in using the (3D) super-resolution microscopy (3D Cell Explorer; Nanolive, Lausanne, Switzerland), to incorporate 3D microscopic photographs (multiple-viewpoint-holographic images, 96 z-stacks) of parasite cultures (provided by the Cell Culture Laboratory, USP-CEU) that were fixed on slides, of important protozoan (Acanthamoeba spp. and Leishmania infantum) and fungi (Encephalitozoon cuniculi) human parasites (Fig. 2, Fig. 3). We have also created an E-learning unit on parasite cell culture http://parasitology.dmu.ac.uk/learn/lab/parasite_cell_cultures/story_flash.html (Fig. 4) which show all the practices and procedures to work in a parasite culture unit in conjunction with detailed information and videos of parasitologists working in real conditions with amoebas and Leishmania infantum cultures.

CONCLUSIONS

We have tested these resources with final year BSc Biomedical Science and MSc Advanced Biomedical Science students at DMU that voluntarily have enrolled to receive a formative training in cell/parasite culture provided by an USP-CEU academic through an Erasmus+ mobility grant. Preliminary results gathered indicate that methods and resources could help academics and technicians to teach and learn to work in a parasite culture laboratory.