



INTRALESIONAL NON-ACID-FAST *MYCOBACTERIUM BOVIS* PHENOTYPES IN THE LYMPH NODES OF NATURALLY-INFECTED CATTLE

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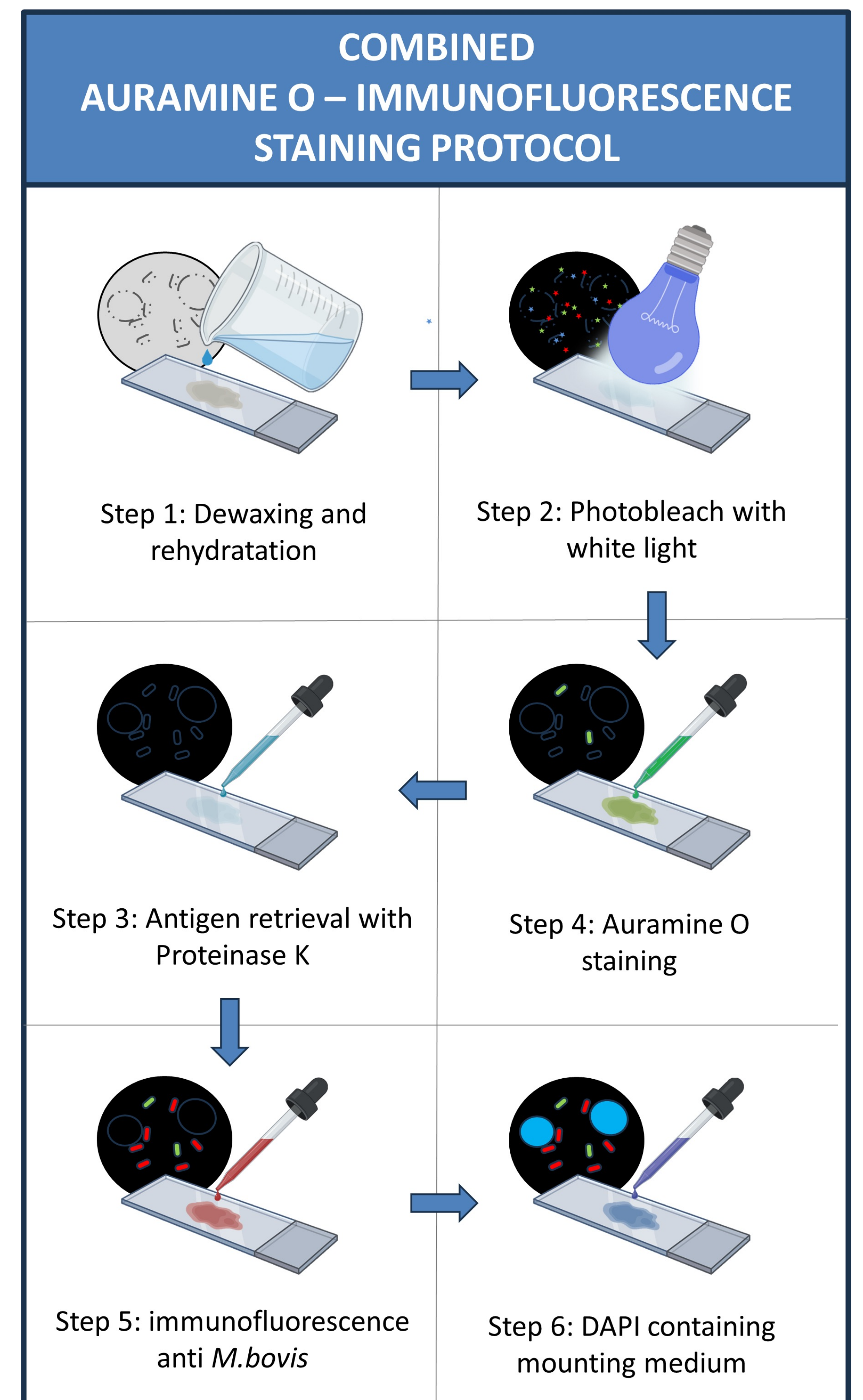
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INTRODUCTION

In human tuberculosis, dormant mycobacteria, which are non-acid-fast bacilli with reduced metabolism and multidrug resistance, have been associated with the latent form of the disease.¹⁻⁵ On the contrary, intralesional non-acid-fast mycobacteria in bovine TB has been poorly investigated. This study aimed to investigate intralesional non-acid-fast *Mycobacterium bovis* phenotypes in lymph nodes of naturally infected cattle.

MATERIALS AND METHODS

Two hundred and fifty formalin-fixed and paraffin-embedded cattle lymph nodes with confirmed *M. bovis* infection were evaluated. Among them, lymph nodes containing at least one granuloma with more than 20 acid-fast bacilli were subjected to a protocol involving photobleaching treatment and enzymatic antigen unmasking, followed by combined Auramine O (AO) – immunofluorescence (IF) staining. Negative controls included a bovine lung with *Trueperella pyogenes* (a non-acid-fast bacterium) induced lesions and a microbiologically negative calf lymph node



RESULTS

Of the 250 lymph nodes, twenty-four were selected for the combined AO - IF staining and non-acid-fast (AO-IF+) bacilli were identified in all of them. Specifically, numerous non-acid-fast bacilli were detected in the necrotic core of the granulomas (Fig. 1-2). Rare non-acid-fast bacilli were occasionally visible inside Langhans-type multinucleated giant macrophages (Fig. 3).

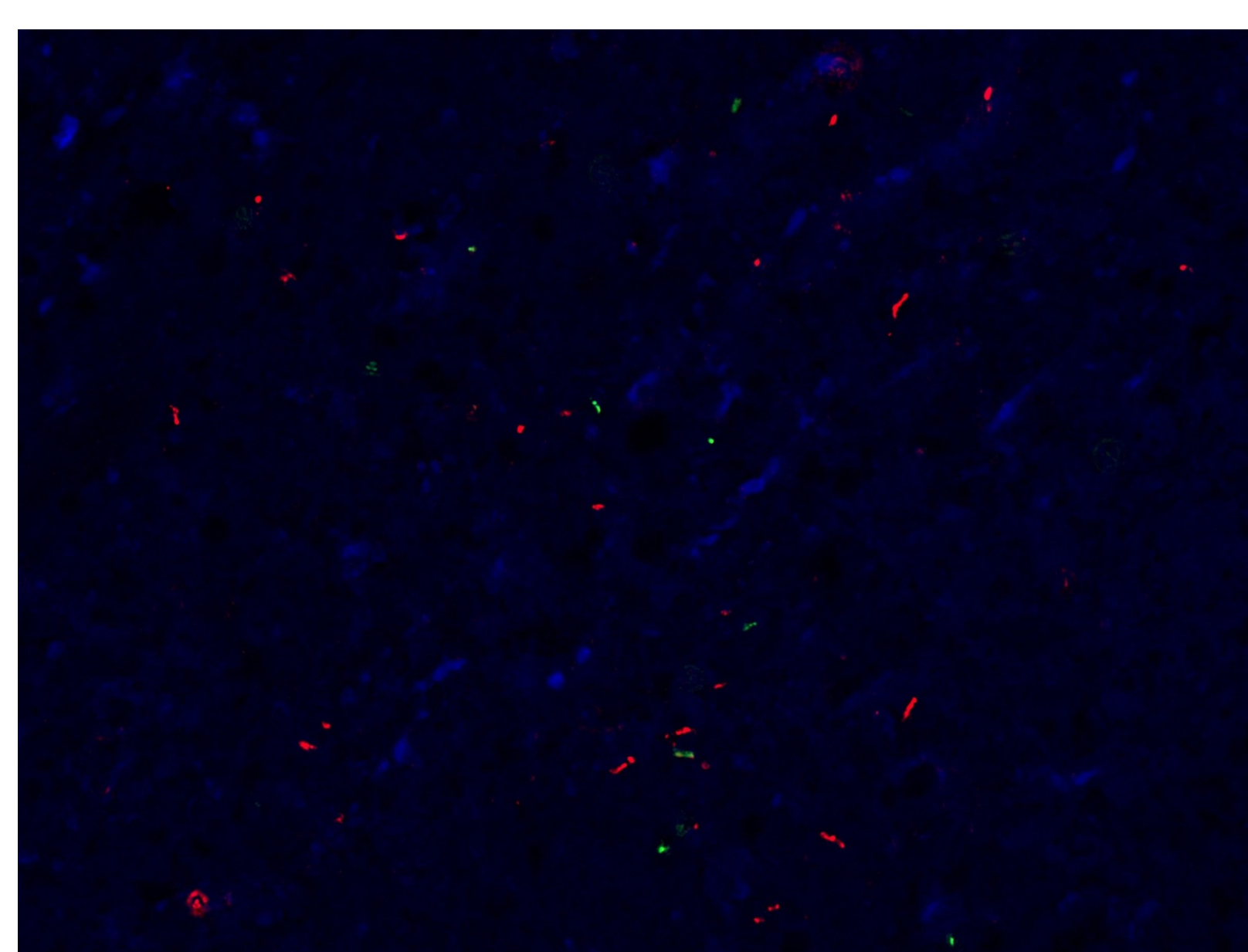


Figure 1. Bovine tuberculosis lymph node. Numerous **non-acid-fast** bacilli were admixed with a few **acid-fast** bacilli

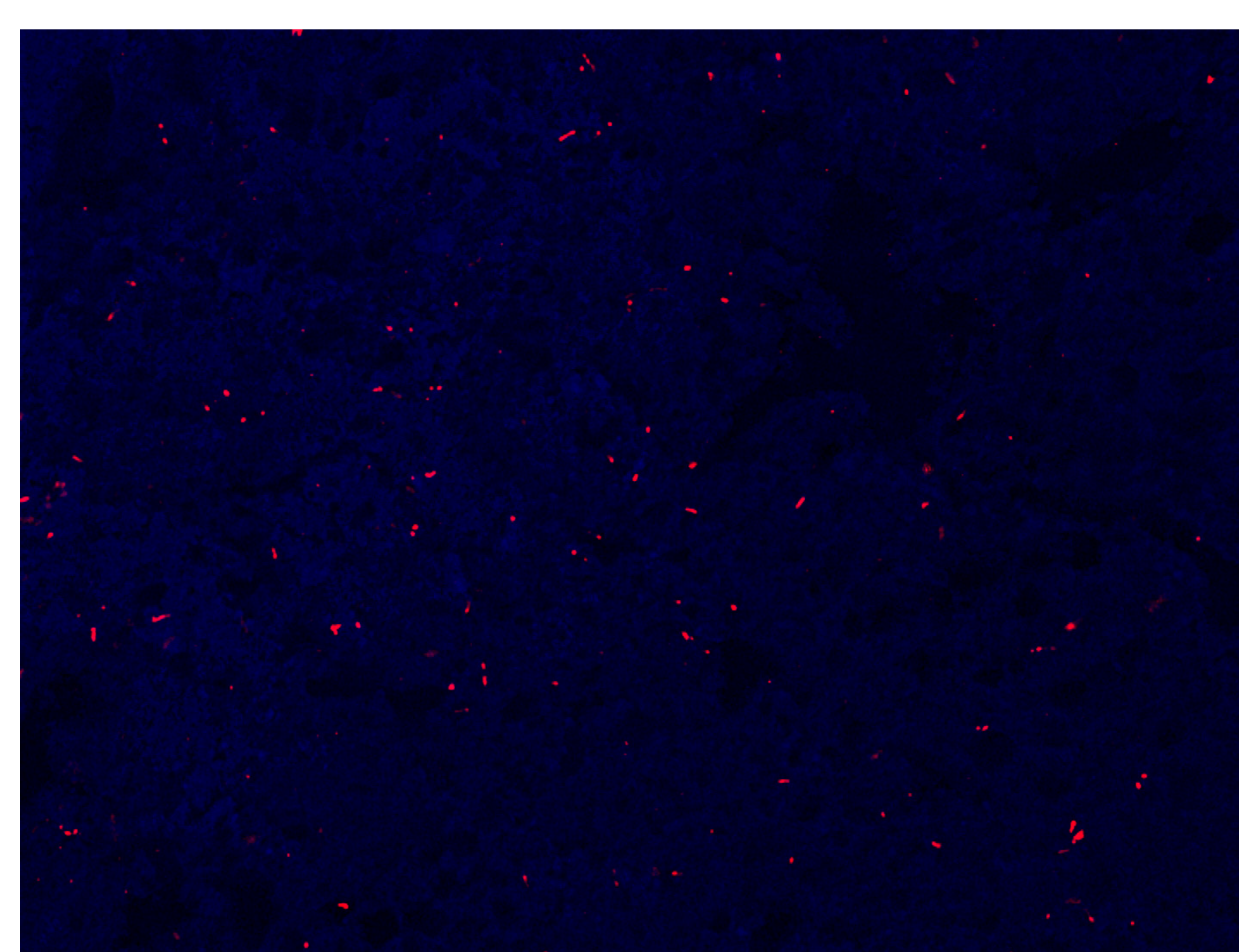


Figure 2. Bovine tuberculosis lymph node. Numerous **non-acid-fast** bacilli were visible in the granuloma necrotic core.

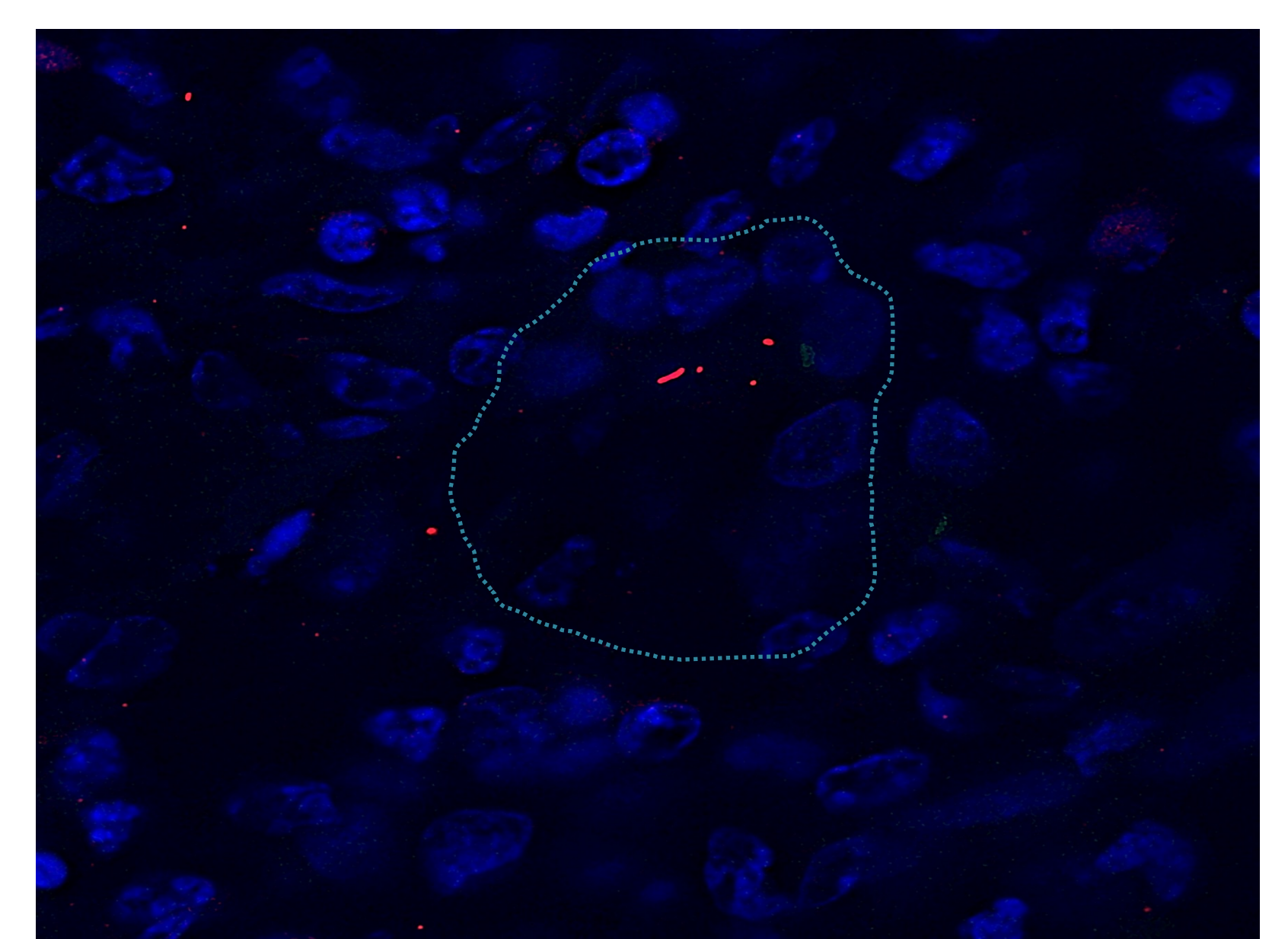


Figure 3. Bovine tuberculosis lymph node. Rare **non-acid-fast** bacilli were visible inside Langhans-type multinucleated giant macrophages.

CONCLUSIONS

This study demonstrates intralesional non-acid-fast *M. bovis* phenotypes in lymph nodes of infected cattle, providing new insights into bovine tuberculosis pathogenesis. Further research is needed to understand the role of non-acid-fast bacilli in the context of bovine tuberculosis, their potential impact on public health, and the potential role of bovine tuberculosis in studying latent human tuberculosis.