inflammatory properties – The authors investigated the effect of recombinant YopM on invitro osteoclast differentiation and bone destruction in the human tumour necrosis factor transgenic (hTNFtg) mouse model of RA.

Methods Recombinant YopM was cloned into pET-24 b (+) expression vector, expressed in BL21 cells and purified. The uptake of YopM into bone marrow macrophages (BMMs) and osteoclasts was analysed using Cy3-coupled YopM and laser scanning microscopy. The authors then studied the effect of YopM on osteoclastogenesis in an invitro osteoclast formation assay. To unravel the signalling pathways involved in the effects of YopM, the authors investigated the activation of extracellular-signal-regulated kinase, p-38, AKT and nuclear factor- κ B (NF- κ B) signalling by Western Blot analysis. With respect to a potential invivo application of YopM, the authors injected YopM-Cy5 in the hindpaws of hTNFtg mice and monitored its distribution by fluorescence reflection imaging (FRI). Finally, the authors treated hTNFtg mice with YopM and an inactive deletion mutant of YopM and recorded clinical parameters. In addition, histomorphometric analyses of joint destruction were performed in hindpaw sections.

Results YopM penetrated the cell membrane of BMMs, but not osteoclasts invitro and accumulated in the cells. Most interestingly, incubation of BMMs with YopM resulted in a strong reduction of both, osteoclast precursors and mature osteoclasts. Studying the signaling pathways affected by YopM, the authors found that YopM reduced the TNF α induced activation of NF- κ B by reducing the phosphorylation of I κ B α . TNF α mediated phosphorylation of mitogen activated protein kinases and AKT, however, was not altered by YopM. As shown in FRI, YopM-Cy5 injected into the hindpaws was detectable during the monitored time of 48 h. YopM treated hTNFtg mice showed a delayed onset of paw swelling and histomorphometric analyses of the hindpaw sections revealed reduced bone destruction and inflammation in YopM treated hTNFtg mice in comparison to untreated hTNFtg mice.

Conclusion These results suggest that YopM has the potential to reduce inflammation and bone destruction invivo. Therefore, the underlying mechanisms and functional properties of YopM may serve as basis for the development of novel strategies for the treatment of RA.

11 THE *YERSINIA* OUTER PROTEIN M INHIBITS OSTEOCLASTOGENESIS *IN VITRO* AND REDUCES BONE DESTRUCTION IN HTNFTG MICE *IN VIVO*

Cromme C,¹ Rüter C,² Scharnert J,² Kollias G,³ Schmidt M A,² Pap T,¹ Bertrand J¹ ¹Institute of Experimental Musculoskeletal Medicine, University Hospital Münster, Germany; ²Institute of Infectiology, ZMBE Münster, Germany; ³Institute of Immunology, Biomedical Sciences Research Center "Alexander Fleming", Vari, Greece

10.1136/annrheumdis-2011-201232.11

Background One main phenomenon in rheumatoid arthritis (RA) is severe bone destruction, mainly mediated by osteoclasts in the arthritic joints. YopM is the outer protein M of *Yersinia* species. It has cell penetrating properties and can translocate into the cell by its two N-terminal α -helices. Interestingly, YopM is capable of downregulating inflammatory response in host tissues infected with *Yersinia*. Based on this dual function – the self-delivering ability and the anti-