

Anti-MOSPD2 Antibodies as A Novel Therapy for Rheumatoid Arthritis

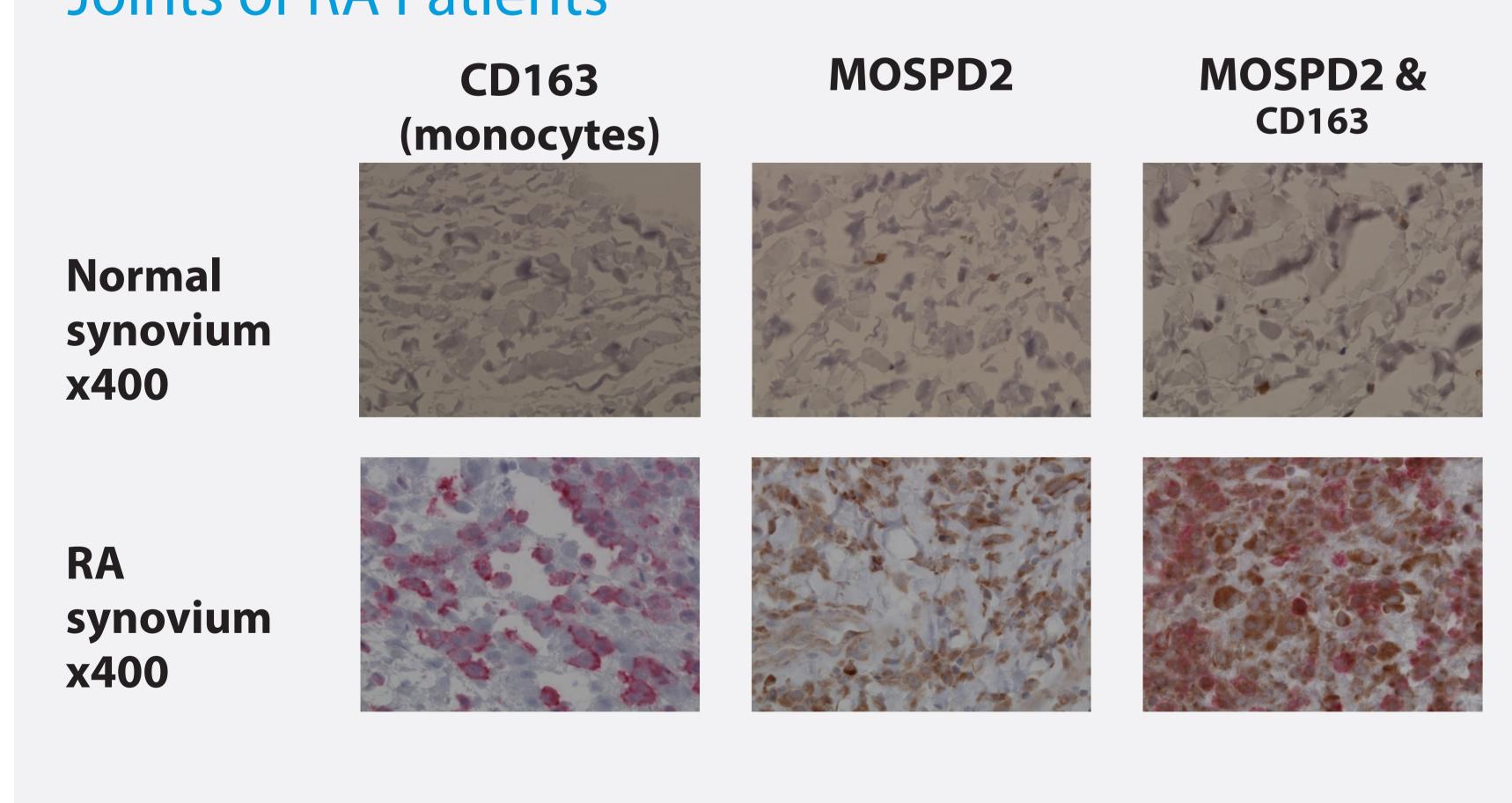
MOSPD2 is a Key Target for Inhibiting Monocyte Migration in RA

Niva Yacov, Yaniv Salem, Oshrat Prophate-Meiran, Pinhas Kafri, Eyal Breitbart and Itzhak Mendel VBL therapeutics, Modi'in, Israel

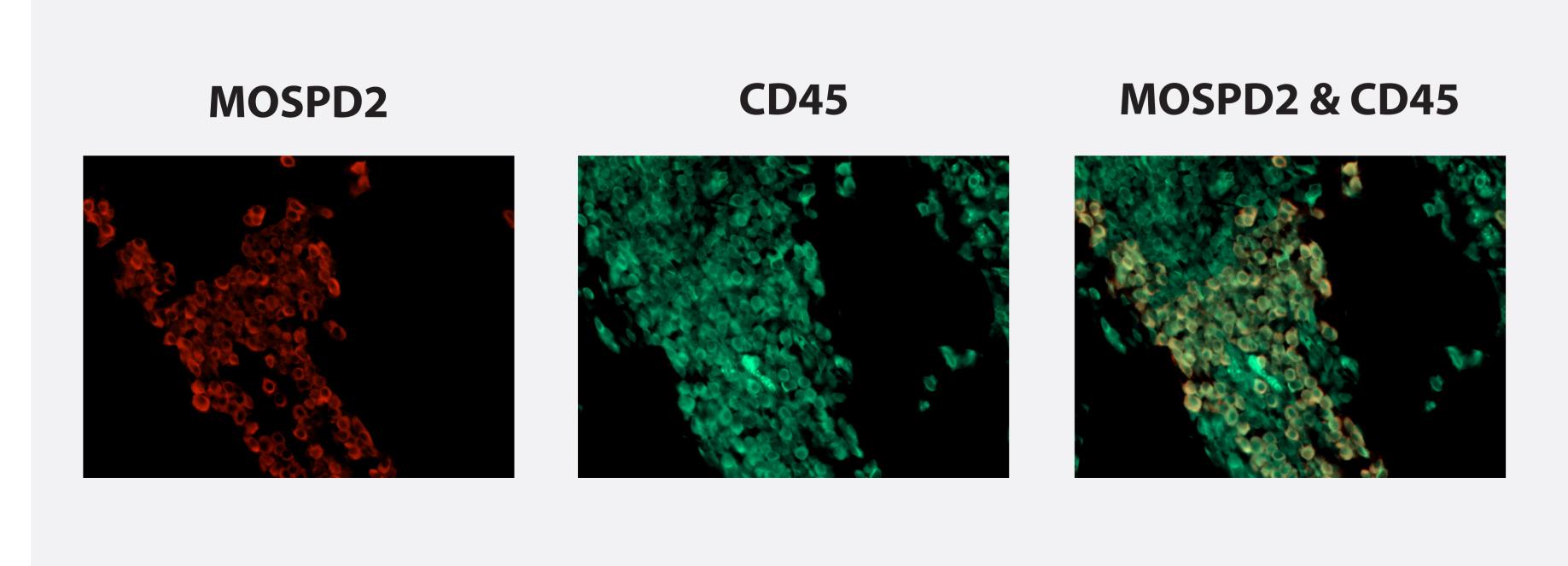
BACKGROUND

- While adaptive immune responses dominate in the initial phase of RA, infiltrating monocytes then further escalate the inflammatory process and tissue damage.
- Motile sperm domain-containing protein 2 (MOSPD2) is a key regulator of monocyte chemotaxis, controlling their migration to damaged tissues in a chemokine-agnostic manner.
- To study the feasibility of targeting MOSPD2 as a potential treatment of RA, we:
- Generated MOSPD2-deficient mice
- Developed proprietary Anti-MOSPD2 monoclonal antibodies

MOSPD2 is Expressed by Infiltrating Monocytes in the Joints of RA Patients

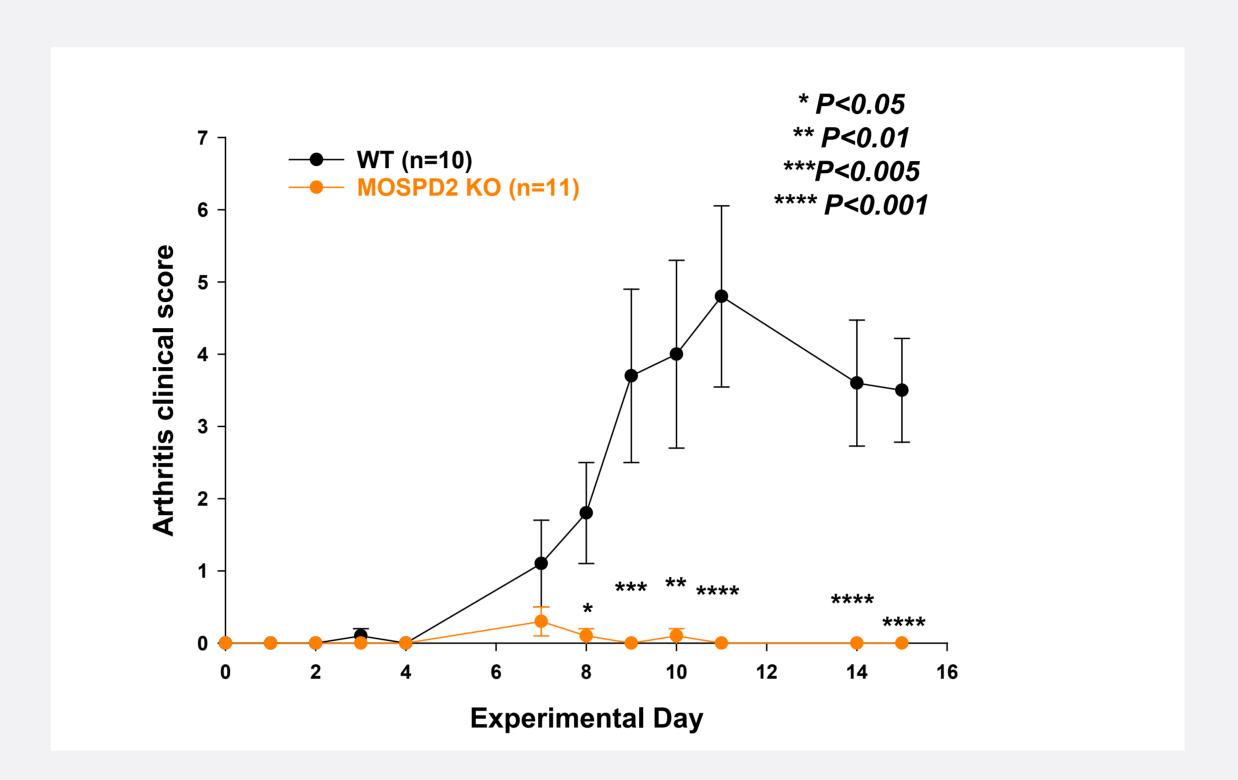


MOSPD2 is Present in the `Crime Scene`: Positive Staining for MOSPD2 in Synovial Tissue from RA Patient



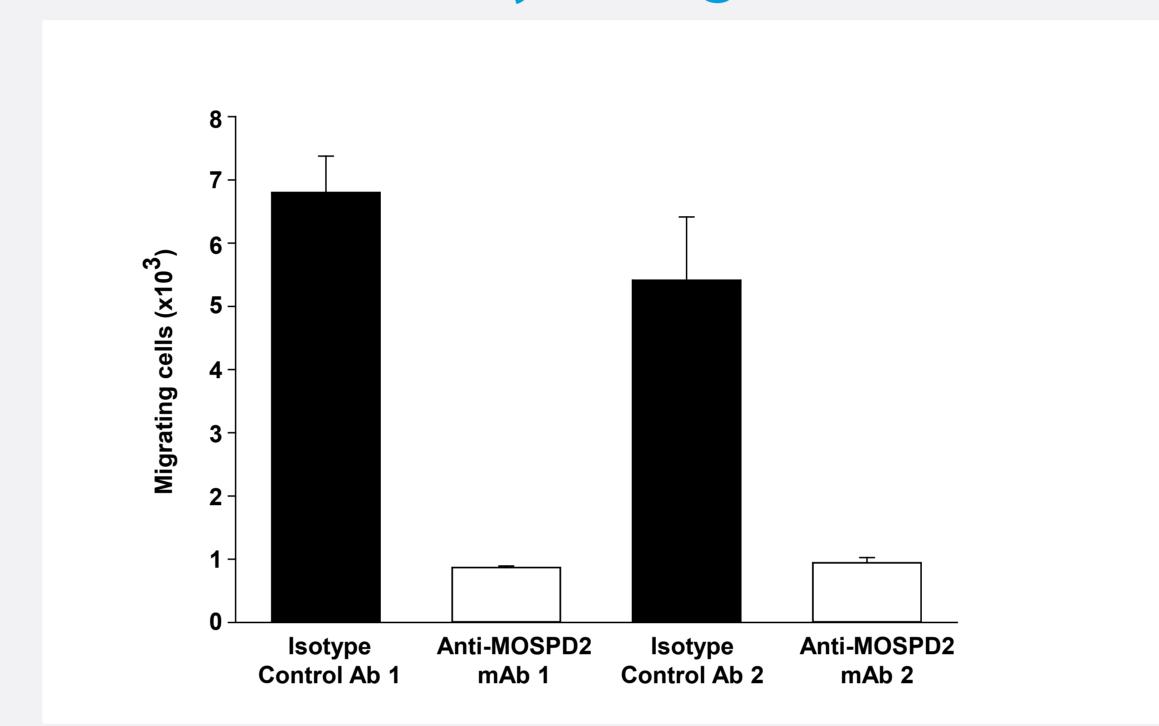
RESULTS

RA is Suppressed in MOSPD2-deficient Mice



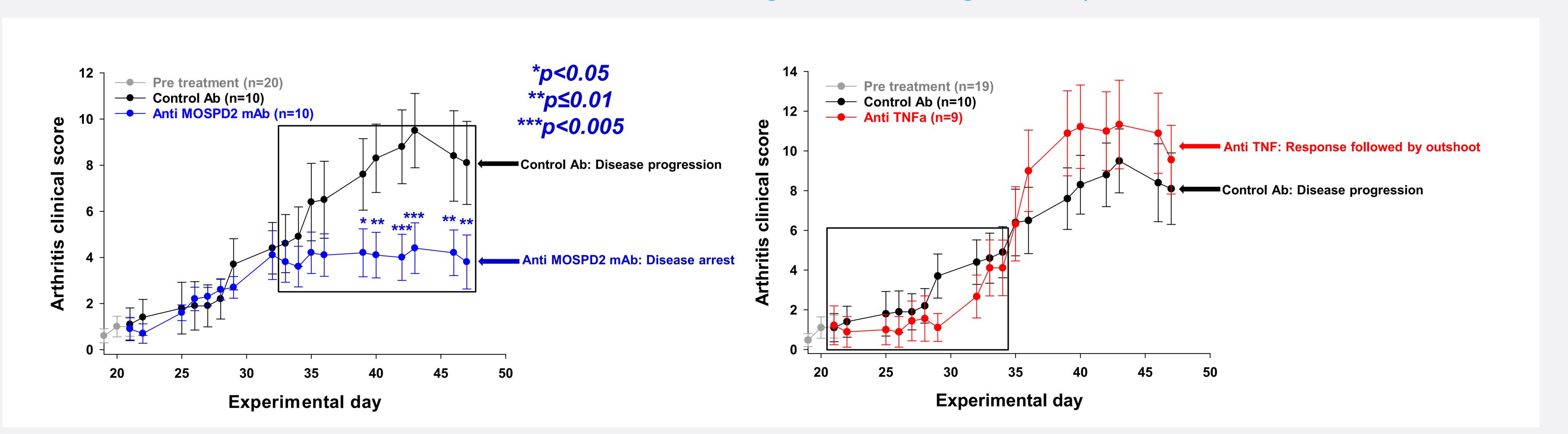
RA was induced by injection of collagen antibodies cocktail on day 0 and LPS on day 2

Anti-MOSPD2 mAbs Significantly Perturb Mouse Monocyte Migration



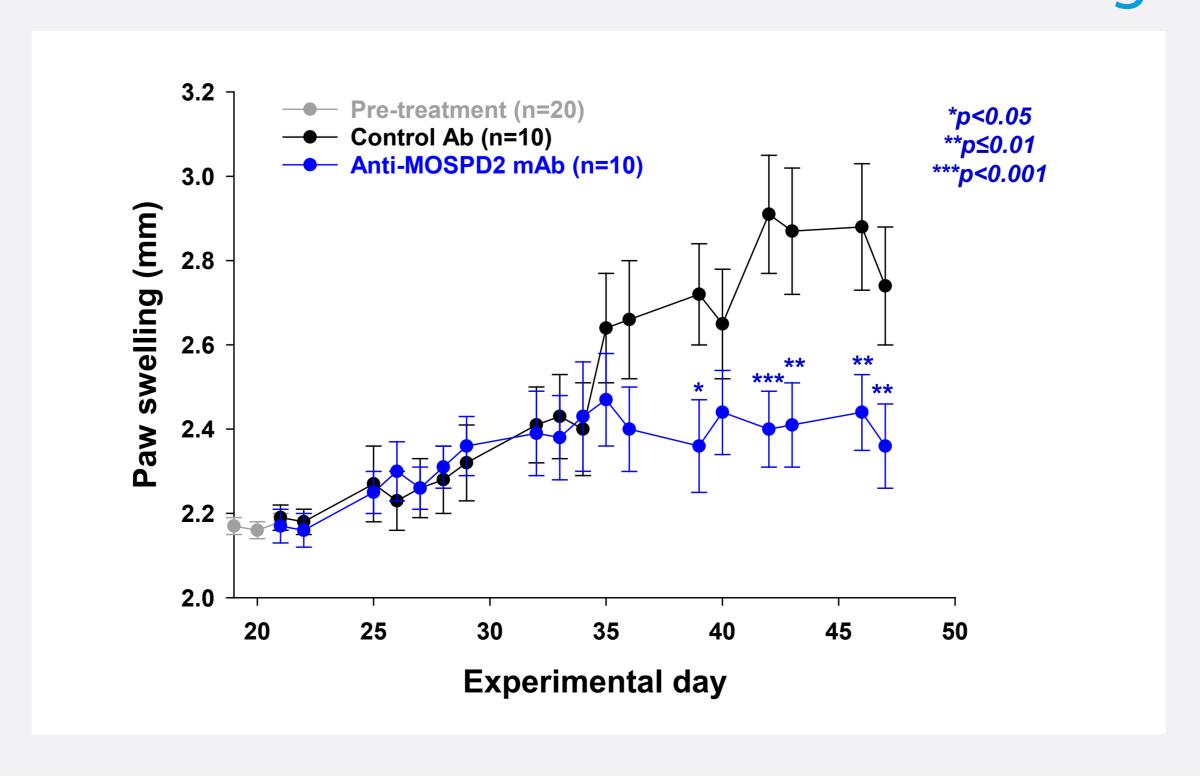
Anti-MOSPD2 mAb 2 was further tested in-vivo

Treatment with Anti MOSPD2 mAb Attenuates Disease Progression and Significantly Ameliorates Clinical Manifestation

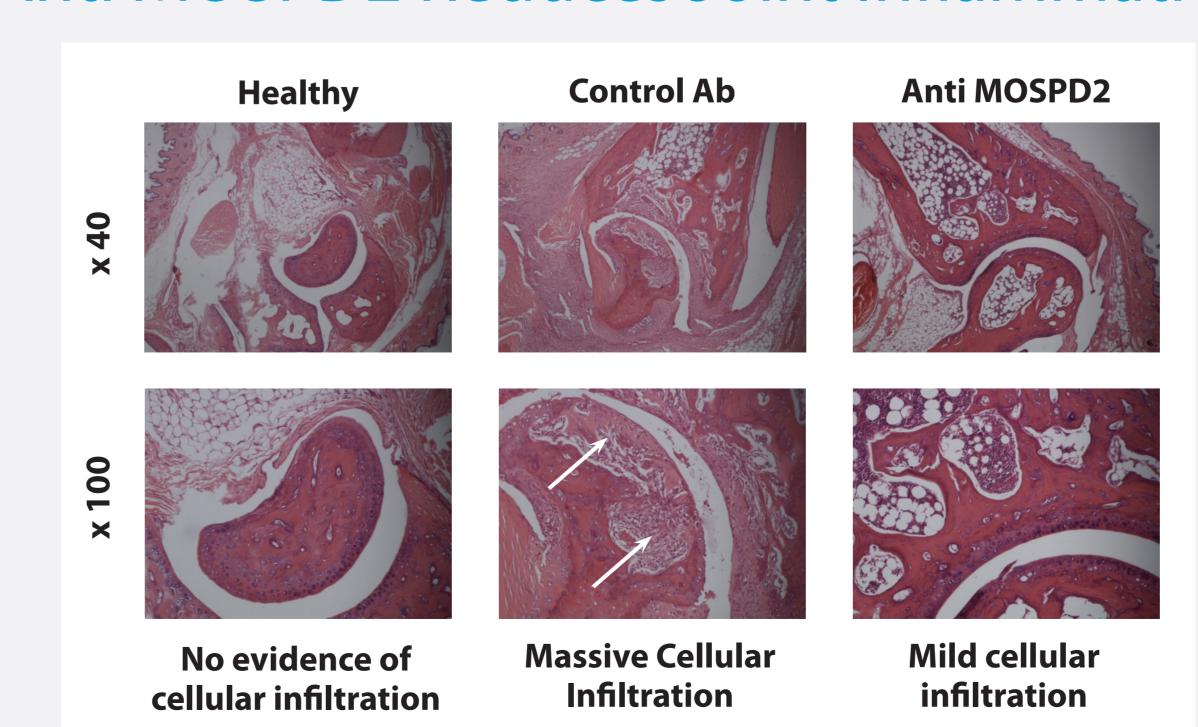


Treatment with antibodies initiated on day 22

Anti MOSPD2 Restricts Paw Swelling



Anti MOSPD2 Reduces Joint Inflammation



CONCLUSIONS



Infiltrating monocytes play a major role in RA pathogenesis.



MOSPD2 is a key regulator of monocyte migration.



Anti-MOSPD2 mAbs profoundly inhibit monocyte migration.



Treatment with anti-MOSPD2 mAb significantly inhibits arthritis progression in collagen-induced arthritis model, with higher efficacy than anti-TNFa in the advanced phase of the disease.



Knockout of MOSPD2 blocks disease development in anti-collagen-induced RA model, strengthening its importance in regulating inflammation in the RA setting



Our results show that anti-MOSPD2 mAbs can have therapeutic potential in RA



Treatment of RA with anti-MOSPD2 antibodies may attain a profound and durable effect on disease progression, either as monotherapy, or potentially as supplement to TNF antagonists.