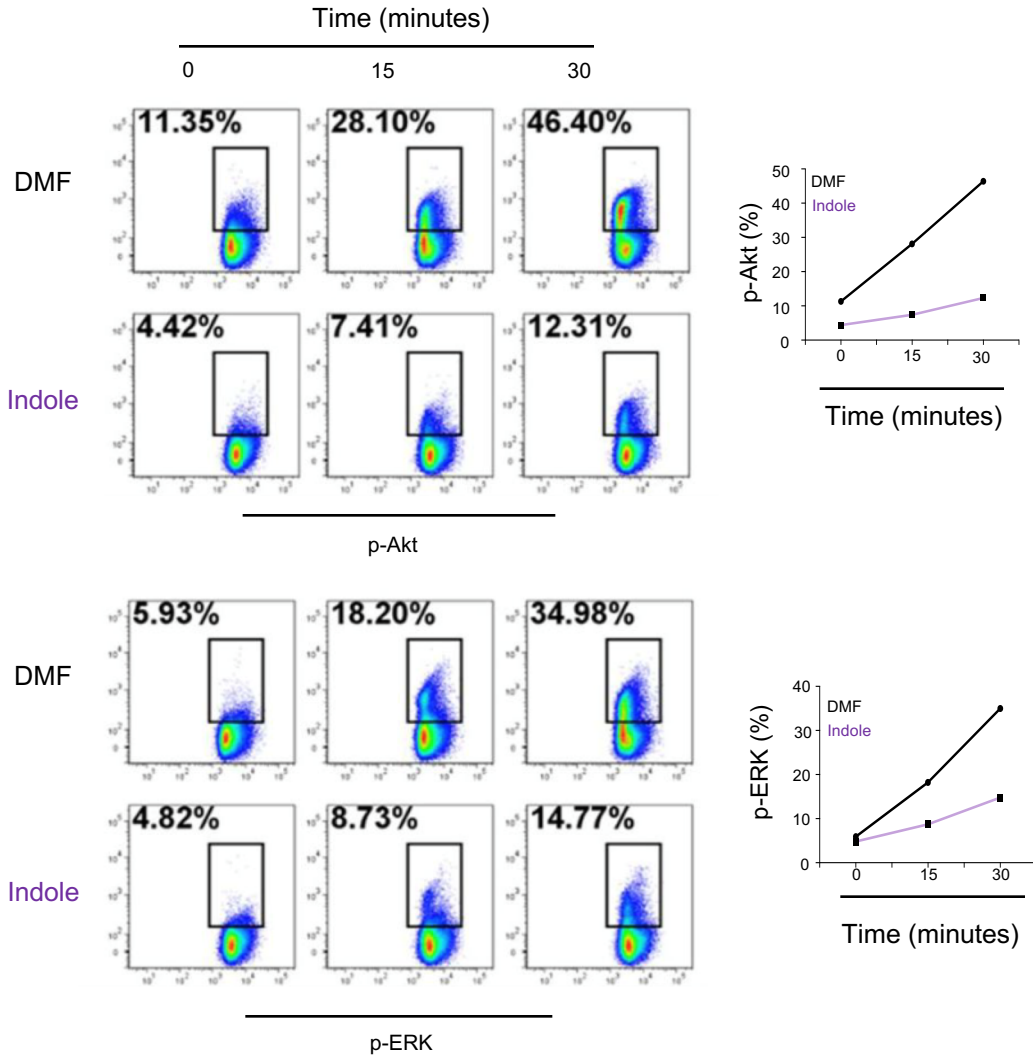


Fig. S1

a



b

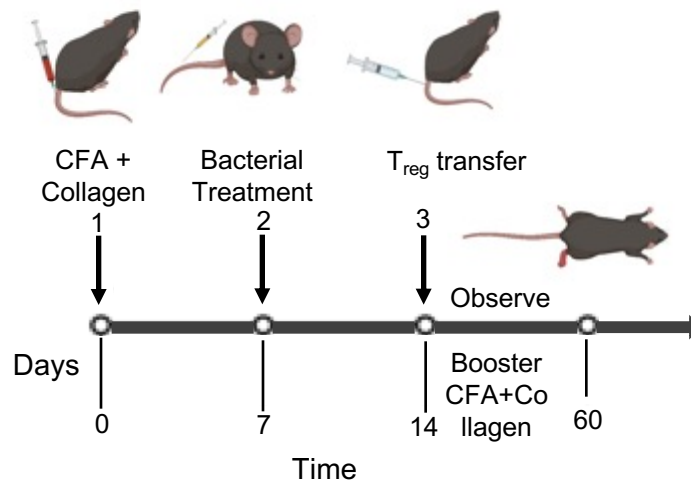


Fig S1: Indole suppresses activation of splenic CD11b⁺ cells by suppressing Akt and ERK signaling pathway

a, Effect of indole (1mM) on the Akt and ERK signaling pathways in CD11b⁺ cells (monocytes/macrophages) in different post incubation time. Figure depicts the flow cytometric dot-plot analysis and time-course graphical representation of phospho-Akt and phospho-ERK expression in CD11b⁺ cells . **b**, Schematic diagram of murine CIA model used for results depicted in Fig 3c to Fig 3g. Mice were inoculated with an emulsion of CFA and collagen on Day 0 followed by bacterial treatment on Day 7 and Treg transfer on Day 14. A booster (repeat) injection of CFA + Collagen was administered to the mice on Day 21 to enhance CIA.

Fig. S2

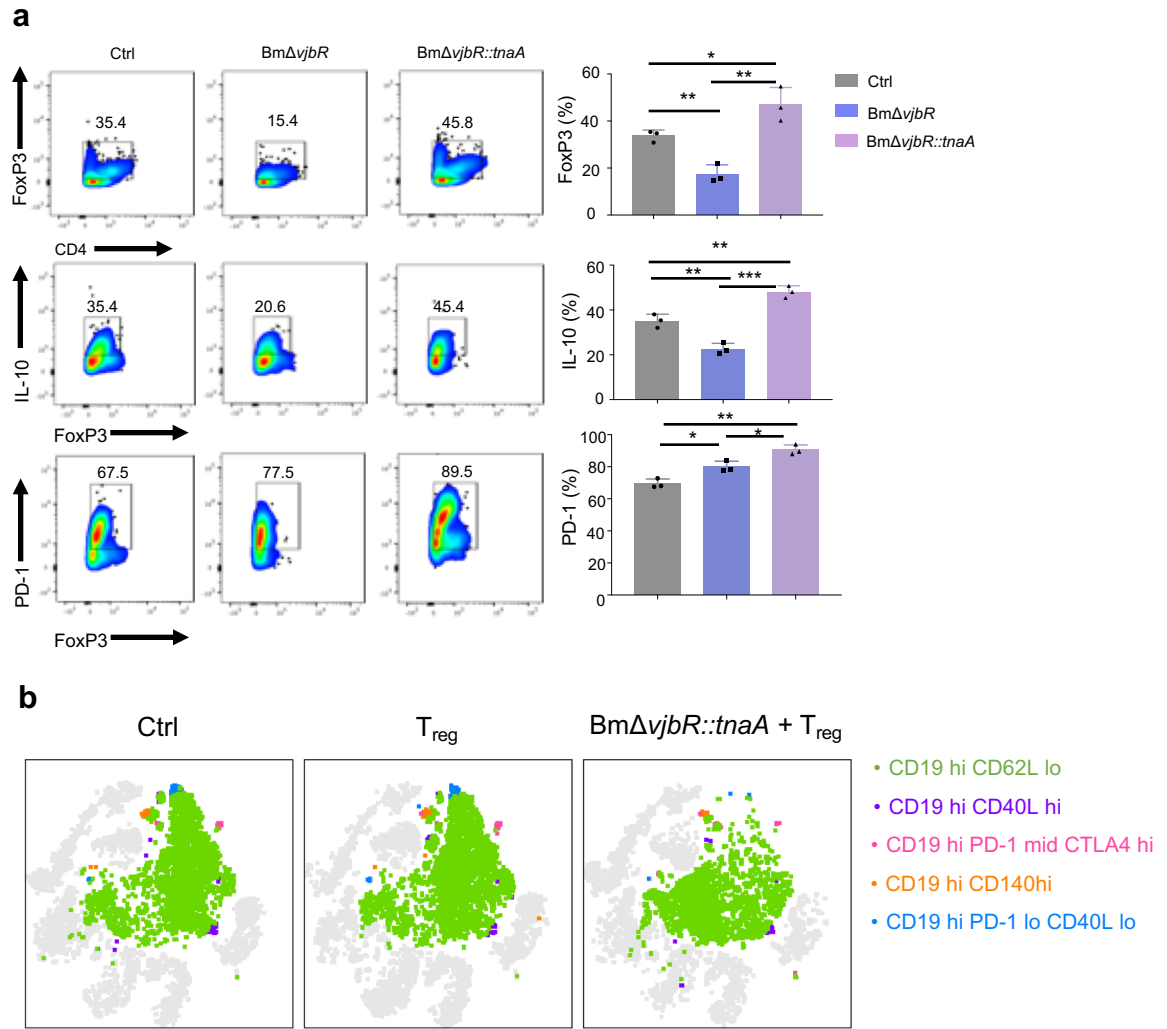
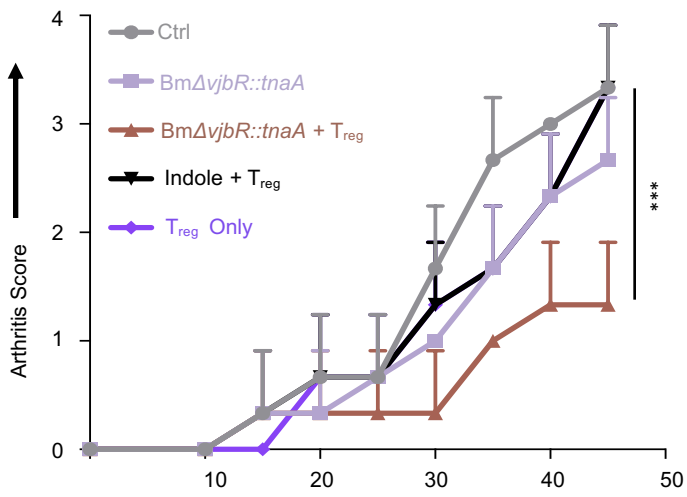


Fig. S2: *BmΔvjbR::tnaA* activates T_{reg} cells and modulates B-cell mediated inflammation.

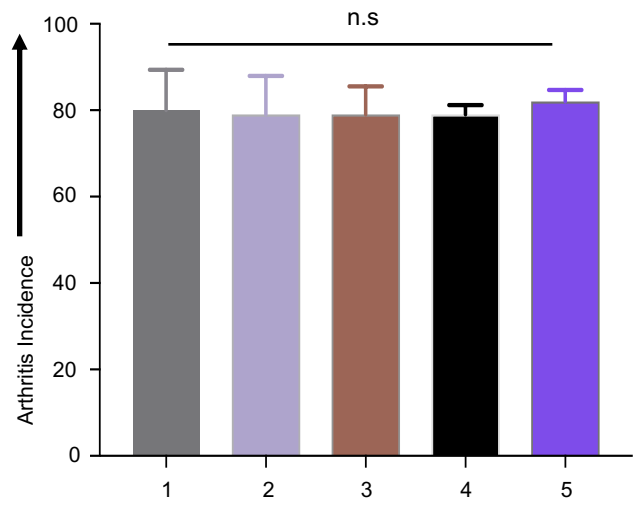
a, BMDMs infected with either *BmΔvjbR::tnaA* or *BmΔvjbR* were co-cultured with CD4⁺ T cells from mouse LNs and spleen and activated by using anti-CD3/CD28 Abs. Flow cytometric dot-plot assay shows that *BmΔvjbR::tnaA* treated BMDMs greatly promoted expression of FoxP3 and PD-1 and production of IL-10 in CD4⁺ T cells. The dot-plots are followed by graphical representation from 3 independent experiments. **b**, The CD19⁺ population is shown in the viSNE plots. Data represent means ± SD. Student's *t*-test or Tukey's multiple comparisons test was applied for statistical analysis. *, **, ***: significance at $p < 0.05, 0.01, 0.001$.

Fig. S3

a



b



1. Ctrl 2. *BmΔvjbR::tnaA* 3. *BmΔvjbR::tnaA* + T_{reg}
4. Indole + T_{reg} 5. T_{reg} Only

Fig. S3: Bm Δ vjbR::*tnaA* in combination with T_{regs} delays the progression of CIA.

a, Arthritis Score and **b**, arthritis incidence derived from treatment of CIA mice with indicated treatment strategies. Mice were inoculated with an emulsion of CFA and collagen on Day 0 followed by Bm Δ vjbR::*tnaA* (5×10^7 cfu) and/or indole treatment (20 mg/kg) on Day 21 followed by T_{reg} cell transfer on Day 25. The T_{reg} only group of mice received only T_{reg} cells without any other treatment. A booster (repeat) injection of CFA + Collagen was also administered to the mice on Day 21 to enhance CIA. Data represent means \pm SD. Student's *t*-test or Tukey's multiple comparisons test was applied for statistical analysis. ***: significance at $p < 0.001$.

Table S1

Population	Cell type	Ctrl	T _{reg}	BmΔ <i>vjbR</i> :: <i>tnaA</i> + T _{reg}
1	CD40L hi CD25 lo	8.6 %	18.7 %	72.7 %
2	CD25 hi Tim3 hi Ki67 hi	34.9 %	20.4 %	44.7 %
3	D45 lo CD44 mid	34.7 %	22.2 %	43.1 %
4	CD45 lo CD44 lo	34.3 %	27.9 %	37.8 %
5	CD44 hi CD160 mid	28.0 %	36.0 %	36.0 %
6	CD3 hi CD8hi CD25 lo	31.8 %	33.3 %	34.9 %
7	CD19 hi CD62L lo	32.7 %	33.6 %	33.7 %
8	CD4 hi CD25 lo	31.9 %	36.8 %	31.3 %
9	CD4 hi CD25 mid CTLA4 lo	37.0 %	32.0 %	31.0 %
10	CD25 hi PD-L1 hi	47.1 %	22.9 %	30.0 %
11	CD8 hi CD62L lo	38.2 %	32.4 %	29.4 %
12	CD19 hi CD40L hi	40.6 %	36.7 %	22.7 %
13	CD19 hi PD-1 mid CTLA4 hi	46.6 %	32.3 %	21.1 %
14	CD19 hi CD40L hi	32.1 %	47.4 %	20.5 %
15	CD25 hi CD140 hi	20.1 %	60.3 %	19.6 %
16	CCR7 hi PD-1 lo	53.1 %	28.0 %	18.9 %
17	CD4 mid PD-L1 hi	55.2 %	29.3 %	15.5 %
18	CD19 hi PD-1 lo CD40L lo	76.0 %	22.3 %	1.68 %

Supplementary Table 1. A list of different immune cell types which were differentiated using the tSNE analysis and their proportion in different treatment groups.

Table S2

Ab	Clone	Fluorophore	Source
Ghost Dye Red 710		Ghost Dye Red 710	Tonbo Biosciences
CD45	30-F11	FITC	Tonbo Biosciences
CD8a	53-6.7	BUV395	BD Biosciences
CD4	GK1.5	eFluor 450	Thermo Fisher Scientific
CD3	17A2	APC-Fire 810	BioLegend
CD19	1D3	BUV805	BD Biosciences
MHC II	M5/114.15.2	Violet Fluor 500	Tonbo Biosciences
CD160	7H1	APC	BioLegend
PD-L1	MIH5	Super Bright 780	Thermo Fisher Scientific
CTLA-4	UC10-4F10-11	PE-Cy7	Tonbo Biosciences
PD-1	29F.1A12	PE-Dazzle 594	BioLegend
Lag-3	C9B7W	BUV661	BD Biosciences
TIM-3	5D12/TIM-3	Brilliant Violet 605	BD Biosciences
CD44	IM7	PerCP	BioLegend
CD62L	HRL1	BUV737	BD Biosciences
Ki-67	B56	Brilliant Violet 711	BD Biosciences
CCR7	4B12	PE	BioLegend
CD69	H1.2F3	BUV563	BD Biosciences
CD25	PC61	Brilliant Violet 650	BioLegend
CD40L	MR1	BB700	BD Biosciences
CD28	37.51	BUV496	BD Biosciences

Supplementary Table 2: List of Abs used in CyTEK assay