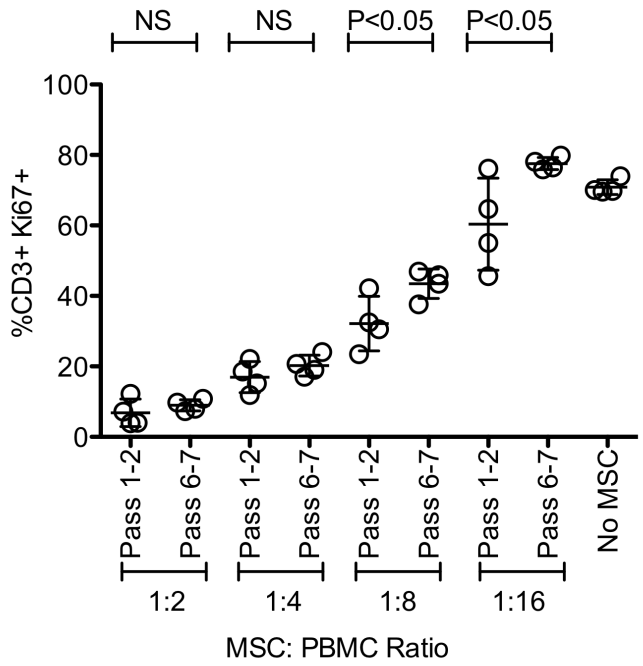
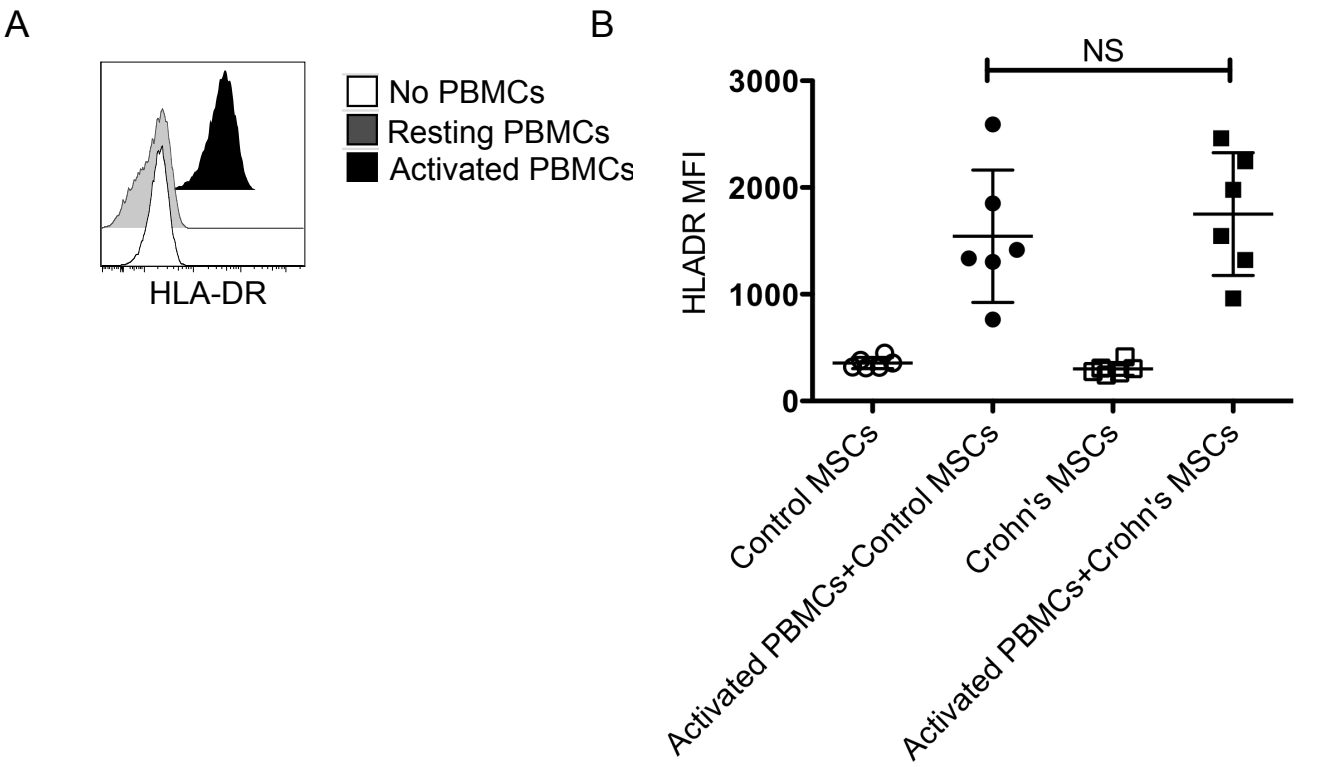


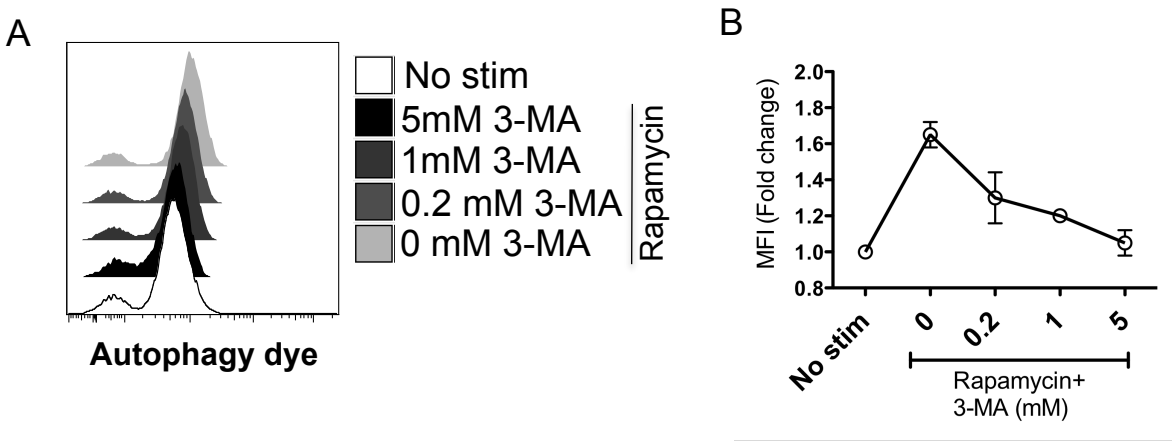
Supplementary Figure 1: Suppressive potential of IBD MSCs derived from early vs late passage. Early vs Late passage MSCs (derived from patients CD05, CD07, UC08, CD09) were cocultured with SEB stimulated PBMCs from a healthy donor at the indicated concentrations. T cell proliferation (%CD3+Ki67+) is represented with mean ±SD. Two-tailed T test was performed to obtain the P Values in Prism software.

Figure S1



Supplementary Figure 2: HLADR induction by activated T cells in Crohn's MSCs. (A) Representative and (B) Cumulative Mean Fluorescence Intensity of HLADR expression on Crohn's and healthy MSCs induced by activated T cells is shown.

Figure S2



Supplementary Figure 3: 3MA blocks autophagy activity. Hela cells were stimulated with 250nmol/l Rapamycin in the presence of variable 3- Methyl Adenine concentrations and autophagy influx was measured under flow cytometry. (A) Representative and (B) Cumulative of two independent experiments is shown.

Table S1: Clinical trials of MSCs for Luminal and Fistular Crohn's Disease

NCT ID	MSC			Source		Crohn's		Phase	Location	Sponsor
	BM	ASC	UC	Auto	Allo	Lu	Fis			
00543374* 01233960 01510431 00482092	X				X	X		III	USA	Mesoblast, Ltd.
01090817	X				X	X		II	Australia	Royal Perth Hospital
00294112*	X				X	X		II	USA	Osiris Therapeutics, Inc.
01540292	X				X	X		I	Belgium	University Hospital of Liege
02150551	X				X	X		I	USA	Children's National Medical Center
NTR1360**	X			X		X		I	Netherlands	Leiden University Medical Center
01659762	X			X		X		I	USA	Emory University
02000362			X		X	X		II	South Korea	Kang Stem Biotech Co., Ltd
01541579		X			X		X	III	Europe & Israel	Cellerix (TiGenix S.A.U.)
01314092 01623453		X		X			X	II	South Korea	Anterogen Co., Ltd.
01157650		X		X			X	I	Spain	Universidad de Navarra
01915927		X		X			X	I	USA	Mayo Clinic
01874015	X			X			X	I	Iran	Royan Institute
01144962	X				X		X	I	Netherlands	Leiden University Medical Center

*: Completed study. **: Registered in the Netherlands National Trial Register. BM: Bone Marrow MSC, ASC: Adipose-Derived Stem Cells, UC: Umbilical cord, Auto: Autologous, Allo: Allogeneic, Lu: Luminal, Fis: Fistular, Ph: Phase

Table S2: IBD Patient Characteristics

Patient	Sex	Age	Disease	Histology											
				Ileum	Duodenum	Stomach	Esophagus	Rectum	Recto sigmoid	Colon					
										Descending	Ascending	Transverse	Sigmoid	Cecum	Random
CD1	M	11	CD	+	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CD2	M	15	CD	NA	-	+	-	-	NA	+	NA	NA	+	NA	NA
CD3	M	14	CD	NA	NA	NA	NA	+	NA	+	+	+	NA	NA	NA
CD4	F	16	CD	NA	+	+	-	NA	+	+	-	NA	NA	+	NA
CD5[a]	F	18	CD	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	-
CD7	F	16	CD	NA	-	+	+	+	NA	+	NA	NA	+	NA	NA
UC8[b]	M	13	UC	-	-	+	-	+	NA	+	+	+	-	+	NA
CD9[c]	M	16	CD	+	NA	NA	NA	-	NA	-	+	+	+	-	NA
CD10	M	17	CD	+	NA	NA	+	NA	NA	NA	NA	NA	NA	NA	+
CD11	F	18	CD	NA	-	-	+	NA	+	+	+	+	+	+	NA

[a]Despite an increase in lamina propria mixed inflammatory infiltrate, there is no convincing evidence of chronic or active colitis. Given the previous biopsy findings, this may represent a resolving colitis. [b]The findings are consistent with a chronic inflammatory bowel disease, favoring ulcerative colitis. [c]Architectural distortion is not identified in any of the biopsies. However, several specimens demonstrate increased eosinophils in the lamina propria, a finding which may be seen in very early phase inflammatory bowel disease. + Inflammation, – No active inflammation, NA Specimen not available.

Table S3. Genes significant to MSC immunobiology, biodistribution and regeneration	
Immunobiology	A20 (Tumor necrosis factor, alpha-induced protein 3) AHR (Aryl hydrocarbon receptor) CCL2 (chemokine (C-C motif) ligand 2) CCL5 (Chemokine (C-C motif) ligand 5) CCL7 (Chemokine (C-C motif) ligand 7) CD46 (complement regulatory protein) CD55 (Complement decay-accelerating factor) CIITA (Class II, major histocompatibility complex, transactivator) COX-2 (Cyclooxygenase-2) CXCL10 (Chemokine (C-X-C motif) ligand 10) CXCL11 (Chemokine (C-X-C motif) ligand 11) CXCL9 (Chemokine (C-X-C motif) ligand 9) Gal-1 (Galectin-1) HLA-DR (MHC-II) HLA-G5 (Histocompatibility antigen, class I, G) HO-1 (Heme oxygenase 1) IDO (Indoleamine 2,3-dioxygenase) IL-6 (Interleukin 6) IL8 (Interleukin 8) PDL1 (Programmed death-ligand 1) PDL2 (Programmed death-ligand 2) TGF-B (Transforming growth factor) TLR3 (Toll-like receptor 3) TLR4 (Toll-like receptor 4) TRAIL (TNF-related apoptosis-inducing ligand) ULBP-3 (NKG2D ligand 3)
Homing and Repair	ANGPT2 (Angiopoietin-2) Bcl-2 (B-cell lymphoma 2) CCR10 (C-C chemokine receptor type 10) CX3CR1 (CX3C chemokine receptor 1) CXCL12 (stromal cell-derived factor 1) CXCR1 (C-X-C chemokine receptor type 1) CXCR4 (C-X-C chemokine receptor type 4) CXCR6 (chemokine (C-X-C motif) receptor 6) CXCR6 (Chemokine (C-X-C motif) receptor 6) HGF (Hepatocyte growth factor) HSP70A (heat shock protein 70A) HSP70B (heat shock protein 70B) ICAM-1 (Intercellular Adhesion Molecule 1) KGF (Keratinocyte Growth Factor) TIMP-1 (TIMP metallopeptidase inhibitor 1) TIMP-2 (TIMP metallopeptidase inhibitor 2) TSG-6 (Tumor necrosis factor-inducible gene 6) VCAM-1 (Vascular cell adhesion protein 1)