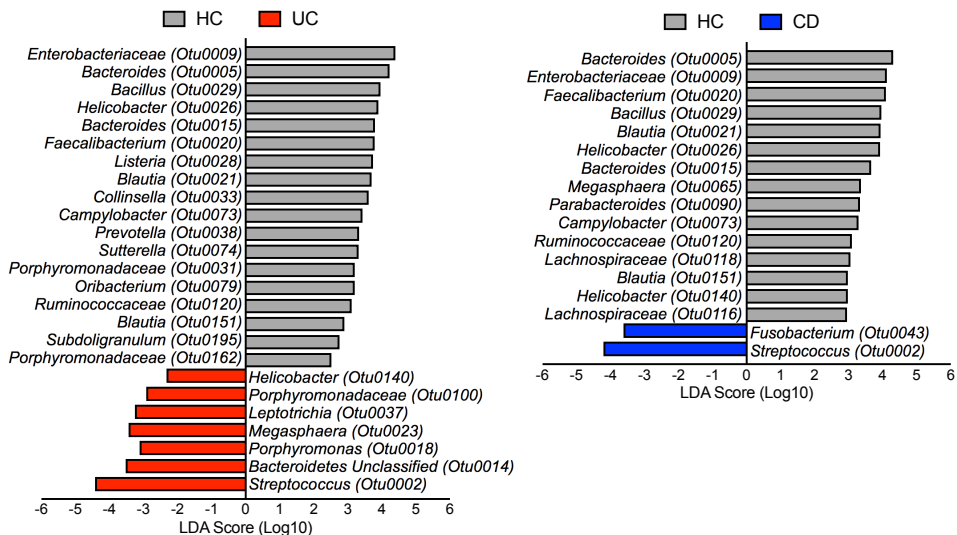
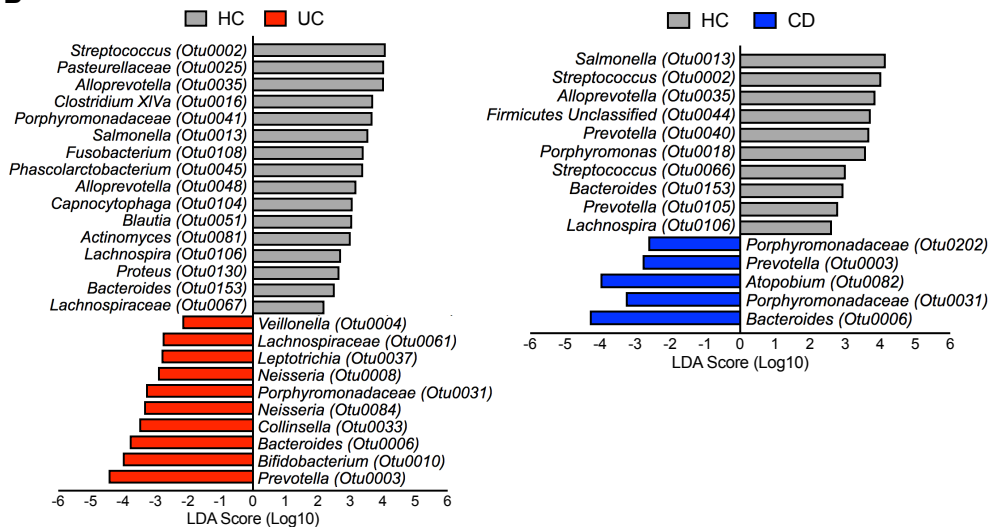


A

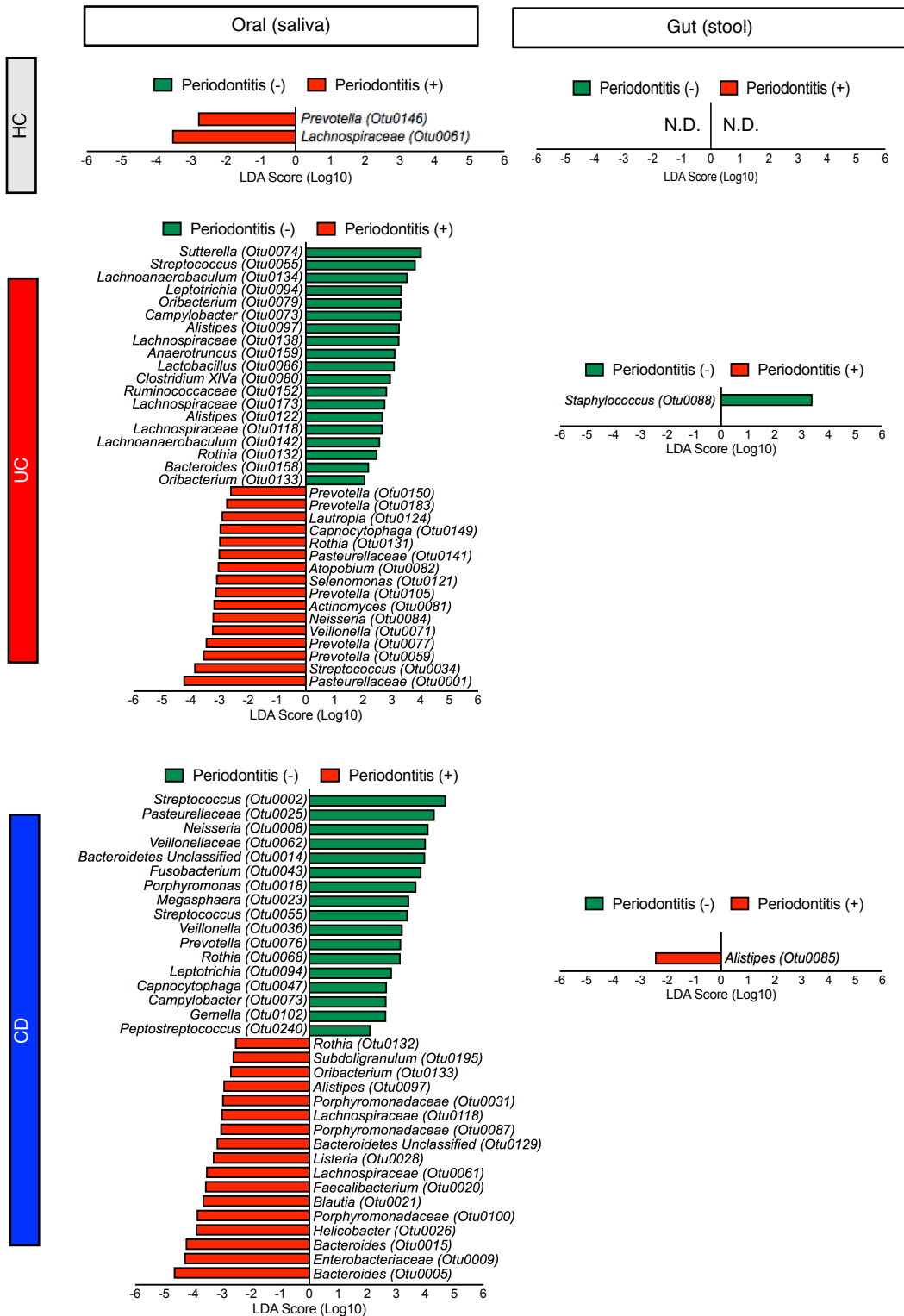


B

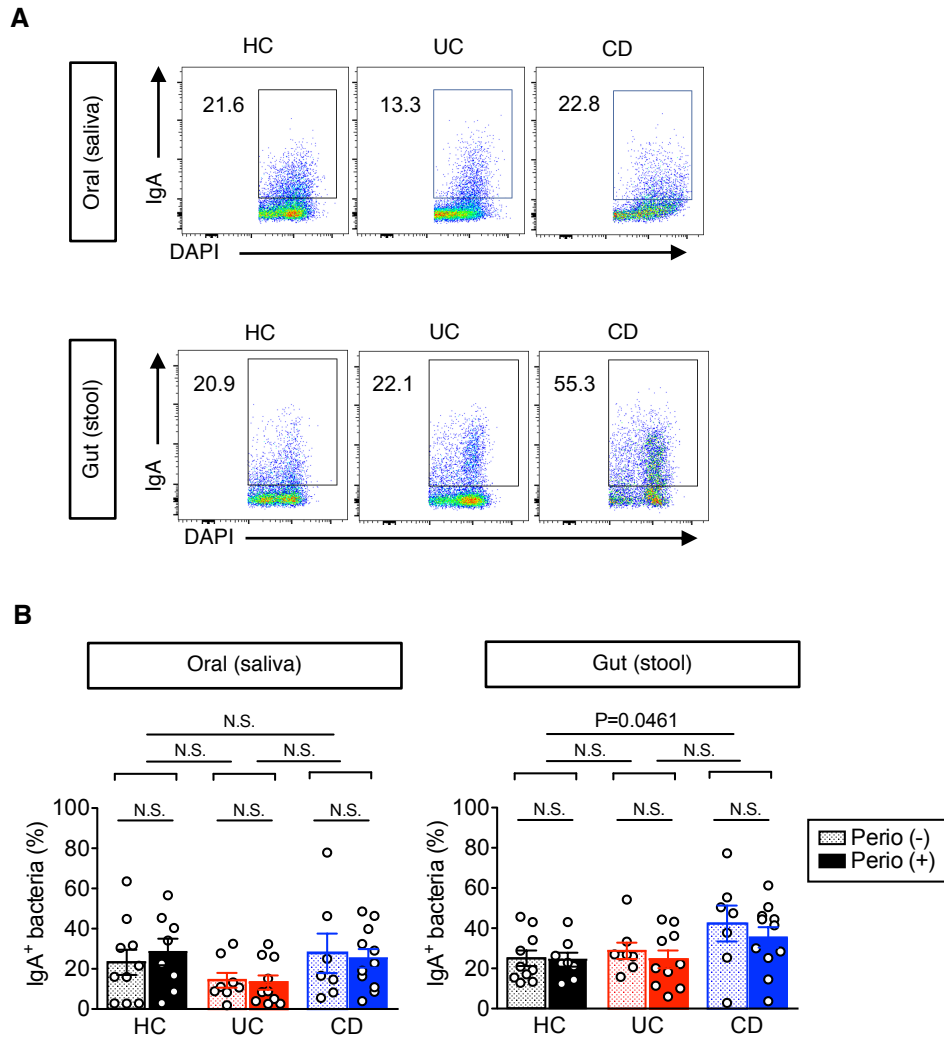


Supplemental Figure 1. Bacterial taxa differentially abundant in IBD.

Bacterial taxa significantly enriched in UC or CD compared to HC were identified by LEfSe. (A) Oral microbiota (saliva). (B) Gut microbiota (stool).

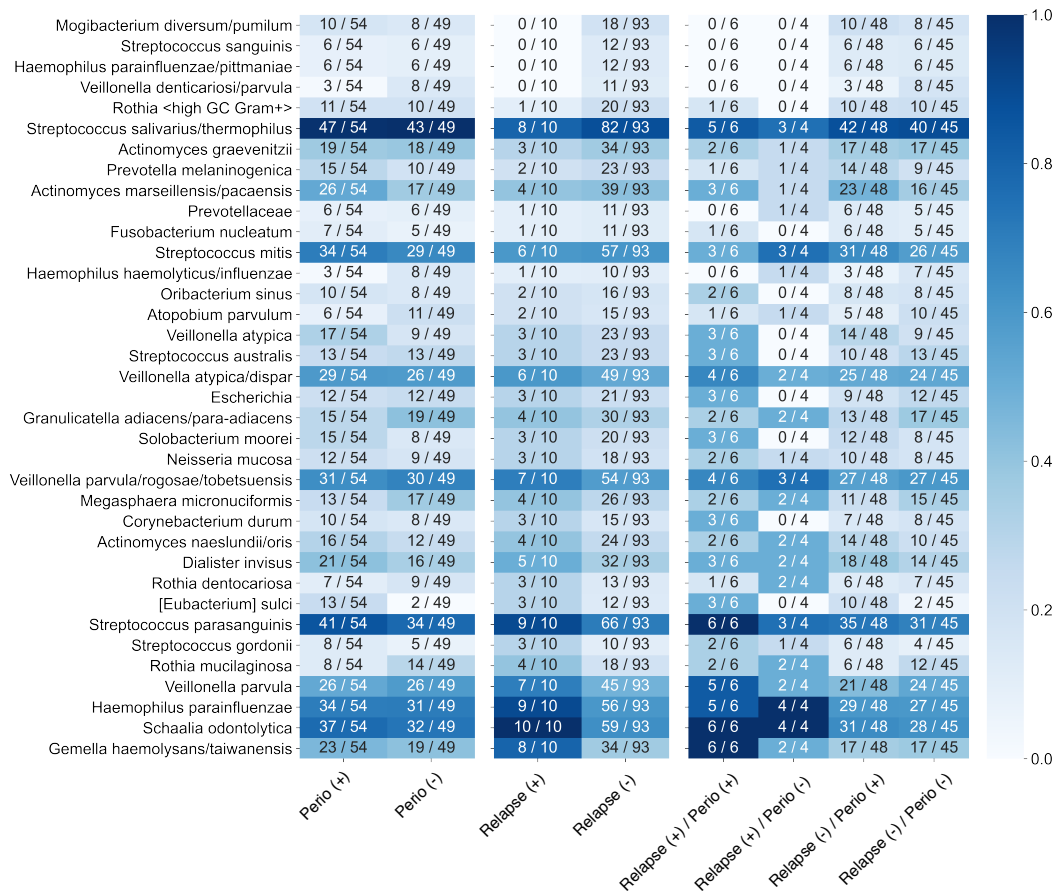


Supplemental Figure 2. Bacterial taxa differentially abundant in incipient periodontitis. Bacterial taxa significantly different between the presence and absence of incipient periodontitis were identified by LEfSe. (A) Oral microbiota (saliva). (B) Gut microbiota (stool). N.D.; not detected



Supplemental Figure 3. IgA-coated bacteria in the saliva and stool.

The abundance of IgA-coated bacteria in the stool. (A) Representative FACS plots. (B) Statistical analysis. Results are shown as mean \pm SD. Dots indicate individual participants (HC = 18, UC = 18, CD = 18). Statistically significant *P* value by 1-way ANOVA followed by Bonferroni post hoc test is shown. N.S., not significant.



Supplemental Figure 4. Prevalence of bacterial species shared between the oral and gut microbiome.

The prevalence of bacterial species commonly colonized in the oral and gut mucosa is shown.

Supplemental Table 2. Clinical features of patients with inflammatory bowel disease

	No.	Mayo score	Disease duration (years)	Disease extent	Steroid	Relapse	Extraintestinal complications (EIM)							Treatment history				First diagnosis			
							PBC	PSC	Gallstone	Spondyloarthritis	Arthritis	Aphthous	Erythema nodosum	5-ASA	thioprine	αTNF	PSL				
UC	Periodontitis (+)	UC-01	4	7.6	E3	SR									○		○			2010-12	
		UC-11	1	4.3	E1	SF									○					2014-03	
		UC-12	1	5.8	E3	SD	○									○			○	2012-08	
		UC-14	2	6.2	E3	SF										○				2012-05	
		UC-15	0	4.7	E3	SF										○				2013-11	
		UC-16	5	2	E3	SF										○				2016-07	
		UC-20	1	3.3	E3	SF										○				2015-04	
		UC-21	1	8.9	E3	SF										○				2009-10	
		UC-23	3	6.6	E3	SD										○			○	2011-11	
		UC-24	3	0.4	E3	SD										○			○	2018-03	
		UC-26	0	12.7	E3	SF								○						2005-11	
		UC-27	1	2.1	E2	SF	○							○						2016-06	
		UC-29	0	4.2	E3	SF						○			○					2014-06	
		UC-31	1	2.1	E3	SF									○					2016-09	
		UC-34	1	8.6	E1	SF									○					2010-01	
		UC-35	2	16.6	E2	SF									○					2002-02	
		UC-36	2	11.5	E3	SF									○					2007-02	
		UC-39	5	9.7	E2	SD	○								○				○	2009-07	
		UC-41	2	7.4	E2	SF									○					2011-05	
		UC-42	4	5	E3	SF									○			○		2013-09	
		UC-43	1	15.1	E3	SF									○			○		2003-08	
		UC-44	0	0.3	E3	SF									○					2018-05	
		UC-45	0	9.2	E1	SF									○					2009-11	
		UC	Periodontitis (-)	UC-02	3	19.9	E3	SD								○		○		○	1998-07
				UC-03	2	1.4	E3	SD	○							○		○			2017-02
UC-04	3			4	E3	SD									○			○	2014-06		
UC-05	2			8.8	E3	SF									○				2009-10		
UC-06	4			4.7	E3	SF									○				2013-11		
UC-08	0			2.6	E2	SF									○					2015-11	
UC-09	1			1.1	E3	SF	○								○					2017-04	
UC-10	2			1.6	E3	SF									○				○	2016-11	
UC-13	0			11.4	E3	SF									○					2007-02	
UC-17	0			4.1	E3	SD									○			○		2014-05	
UC-18	2			8.3	E3	SD									○			○		2010-03	
UC-19	5			0.5	E3	SD									○				○	2017-12	
UC-22	1			2.4	E3	SF									○			○		2016-03	
UC-30	1			1.7	E3	SF									○					2016-11	
UC-32	3			9.2	E3	SF									○					2009-06	
UC-33	0			4.4	E3	SF	○								○				○	2014-04	
UC-37	0			5.4	E3	SF									○					2013-03	
UC-38	2			13.9	E2	SF	○								○					2004-11	
UC-40	0			6.3	E3	SF									○		○			2012-06	

Extent: E1: Ulcerative proctitis, E2: Left-side UC, E3: Extensive
 Steroid: Steroid refractory (SR), Steroid dependent (SD), Steroid free (SF)

CD	No.	Simple CDAI	Disease duration (years)	Disease location	Disease behavior	Resistance to Biologics (RE)	Relapse	Extraintestinal complications (EIM)							Treatment history				First diagnosis			
								PSC	Pancreatitis	Gallstone	Spondyloarthritis	Arthritis	Aphthous	Erythema nodosum	5-ASA	thioprine	αTNF	PSL				
CD	Periodontitis (+)	CD-01	1	15.1	L1	B1										○		○	○		2003-06	
		CD-02	1	2.3	L3	B2		○								○			○		2016-04	
		CD-03	0	1.9	L3	B2		○								○				○	2016-08	
		CD-07	0	2.1	L1	B1							○			○						2016-07
		CD-10	0	6	L3	B2										○				○		2012-08
		CD-12	0	1.9	L3	B2										○						2016-08
		CD-13	3	17.1	L3	B2										○				○		2001-06
		CD-16	2	3.5	L1	B2										○				○		2015-02
		CD-17	0	3.2	L3	B1										○				○		2015-06
		CD-19	0	4.6	L3	B2										○		○		○		2014-01
		CD-22	1	1.1	L3	B2			○							○		○			○	2017-07
		CD-06	7	6.7	L3	B3										○				○		2011-09
		CD-08	0	7.3	L2	B1										○						2011-05
		CD-14	0	6.4	L3	B2										○		○		○		2012-02
		CD-18	0	14.6	L3	B1										○				○		2004-02
CD-20	6	8.8	L1	B2										○				○		2009-11		
CD-24	1	17.5	L3	B1										○						2001-05		
CD-25	0	4	L3	B2										○						2015-01		

Location (L): L1: Terminal ileum, L2: Colon, L3: Ileocolon, L4: Upper GI
 Behaviour (B): B1: Non-stricturing, non-penetrating, B2: Stricturing, B3: Penetrating

Supplemental Table 3. Clinical course of patients with inflammatory bowel disease

		Initial (day 0)		Follo-up visit (1st)					Follo-up visit (2nd)					Follo-up visit (3rd)						
		Dental check (mm/dd/yy)	pMayo	Visit date (mm/dd/yy)	Interval (days from initial)	pMayo	Add drug	Relapse	Visit date (mm/dd/yy)	Interval (days from initial)	pMayo	Add drug	Relapse	Visit date (mm/dd/yy)	Interval (days from initial)	pMayo	Add drug	Relapse	Composite	
UC	Periodontitis (+)	UC-01	07/09/18	4	02/09/18	82	2			12/04/18	148	1			02/03/19	209	1			+
		UC-11	07/09/18	1	09/03/18	56	1			10/15/18	98	0			11/12/18	126	0			+
		UC-12	06/19/18	1	07/03/18	14	0			08/14/18	56	0			10/09/18	112	4	PSL+	+	+
		UC-14	07/24/18	2	09/18/18	56	2			11/20/18	119	2			01/08/19	168	2			+
		UC-15	07/31/18	0	10/02/18	63	3			12/18/18	140	0			02/25/19	209	0			+
		UC-16	07/30/18	5	09/24/18	56	3			11/04/18	97	2			01/12/19	166	1			+
		UC-20	08/02/18	1	09/20/18	49	0			11/15/18	105	0			01/17/19	168	0			+
		UC-21	08/27/18	1	10/29/18	63	0			12/20/18	115	0			02/21/19	178	0			+
		UC-23	06/30/18	3	09/04/18	66	1			12/03/18	156	1			02/05/19	220	1			+
		UC-24	08/25/18	3	11/04/18	71	1			01/12/19	140	1			03/22/19	209	1			+
		UC-26	07/17/18	0	09/14/18	28	0			09/11/18	56	6			09/18/18	63	2			+
		UC-27	07/17/18	1	09/10/18	55	3	5-ASA up	+	11/02/18	108	2			02/03/19	201	1		+	+
		UC-29	08/21/18	0	10/16/18	56	0			12/11/18	112	0			02/05/19	168	0			+
		UC-31	10/11/18	1	12/06/18	56	1			02/03/19	115	1			04/26/19	197	0			+
		UC-34	09/04/18	1	11/13/18	70	0			01/29/19	147	0			03/12/19	189	0			+
		UC-35	09/04/18	2	11/06/18	63	2			01/22/19	140	2			03/26/19	203	2			+
		UC-36	09/08/18	2	11/15/18	68	2			01/26/19	140	2			04/13/19	217	2			+
		UC-39	03/20/19	5	05/14/19	55	0			07/09/19	111	0			07/22/19	124	4	rectum 5-ASA	+	+
		UC-41	09/22/18	2	11/24/18	63	2			01/26/19	126	2			03/30/19	189	2			+
		UC-42	10/02/18	4	11/27/18	56	0			01/22/19	112	0			03/19/19	168	0			+
		UC-43	09/06/18	1	10/18/18	42	0			11/15/18	70	0			01/10/19	126	3			+
		UC-44	09/18/18	0	12/22/18	95	0			02/04/19	139	0			04/27/19	221	0			+
		UC-45	01/21/19	0	03/18/19	56	0			05/27/19	126	0			07/22/19	182	0			+
		UC-02	05/31/18	3	07/22/18	52	2			09/24/18	116	0			12/13/18	196	0			+
		UC-03	07/10/18	2	09/04/18	56	3	SASP+	+	11/26/18	139	1			02/03/19	208	0			+
UC-04	06/12/18	3	09/03/18	83	2			11/20/18	161	1			02/03/19	236	0			+		
UC-05	07/28/18	2	10/03/18	67	1			12/11/18	136	0			02/06/19	193	0			+		
UC-06	07/28/18	4	09/29/18	63	2			10/27/18	91	2			11/27/18	122	4			+		
UC-08	07/13/18	0	08/06/18	24	0			09/04/18	53	0			10/29/18	108	1			+		
UC-09	06/04/18	1	07/03/18	29	4	5-ASA up	+	08/25/18	82	2			10/04/18	122	1			+		
UC-10	06/26/18	2	09/03/18	69	0			12/04/18	161	0			02/06/19	225	0			+		
UC-13	07/30/18	0	10/01/18	63	0			12/03/18	126	0			01/21/19	175	0			+		
UC-17	07/02/18	0	08/20/18	49	0			10/01/18	91	0			12/17/18	168	0			+		
UC-18	06/30/18	2	08/21/18	52	0			10/16/18	108	0			11/20/18	143	1			+		
UC-19	06/11/18	5	07/08/18	27	3			10/03/18	114	2			12/26/18	198	1			+		
UC-22	08/30/18	1	10/25/18	56	0			11/29/18	91	0			02/14/19	168	1			+		
UC-30	07/17/18	1	09/11/18	56	0			10/30/18	105	0			12/17/18	153	0			+		
UC-32	08/28/18	3																	+	
UC-33	09/10/18	0	11/19/18	70	0			01/21/19	133	5	rectum 5-ASA	+	02/25/19	168	3		+	+		
UC-37	08/14/18	0	09/22/18	39	2			11/22/18	100	1			01/15/19	154	1			+		
UC-38	09/25/18	2	11/27/18	63	6	PSL up	+											+		
UC-40	09/19/18	0	12/05/18	77	0			02/19/19	153	0								+		

		Initial (day 0)		Follo-up visit (1st)					Follo-up visit (2nd)					Follo-up visit (3rd)						
		Dental check (mm/dd/yy)	pMayo	Visit date (mm/dd/yy)	Interval (days from initial)	pMayo	Add drug	Relapse	Visit date (mm/dd/yy)	Interval (days from initial)	pMayo	Add drug	Relapse	Visit date (mm/dd/yy)	Interval (days from initial)	pMayo	Add drug	Relapse	Composite	
CD	Periodontitis (+)	CD-01	07/04/18	1	08/29/18	56	0			10/24/18	112	0			12/19/18	168	0			+
		CD-02	07/30/18	1	08/13/18	14	6	aTNF up	+	09/15/18	47	5			11/04/18	97	4			+
		CD-03	07/10/18	0	09/04/18	56	0			11/06/18	119	5	PSL +	+	12/16/18	159	3			+
		CD-07	08/13/18	0	10/09/18	57	0			12/04/18	113	0			02/05/19	176	0			+
		CD-10	08/14/18	0	10/09/18	56	0			12/18/18	126	0			01/18/19	157	0			+
		CD-12	07/31/18	0	09/18/18	49	0			10/23/18	84	0			01/13/19	166	1			+
		CD-13	08/08/18	3	09/25/18	48	0			11/14/18	98	0			01/09/19	154	1			+
		CD-16	08/28/18	2	10/23/18	56	2			12/18/18	112	0			02/12/19	168	2			+
		CD-17	08/21/18	0	10/16/18	56	0			12/04/18	105	0			01/29/19	161	0			+
		CD-19	08/29/18	0	10/31/18	63	0			12/26/18	119	0			02/08/19	163	0			+
		CD-22	08/25/18	1	09/29/18	35	3			11/01/18	68	5	PSL +	+	02/18/19	177	2			+
		CD-06	06/12/18	7	09/12/18	92	4			11/15/18	156	3			01/25/19	227	1			+
		CD-08	09/08/18	0	12/08/18	91	0			03/09/19	182	0			05/30/19	264	0			+
		CD-14	07/28/18	0	10/13/18	77	0			12/08/18	133	0			02/03/19	190	0			+
		CD-18	09/22/18	0	10/27/18	35	0			12/22/18	91	0			03/09/19	168	0			+
	CD-20	08/22/18	6	11/02/18	72	0			02/14/19	176	0			05/25/19	276	1			+	
	CD-24	11/05/18	1	01/28/19	84	0			04/22/19	168	0			07/23/19	260	0			+	
	CD-25	01/08/19	0	03/05/19	56	2			06/18/19	161	0			08/13/19	217	0			+	