

## **SUPPLEMENTARY MATERIAL**

### **Hair loss profiles and ritlecitinib efficacy in patients with alopecia areata: post hoc analysis of the ALLEGRO phase 2b/3 study**

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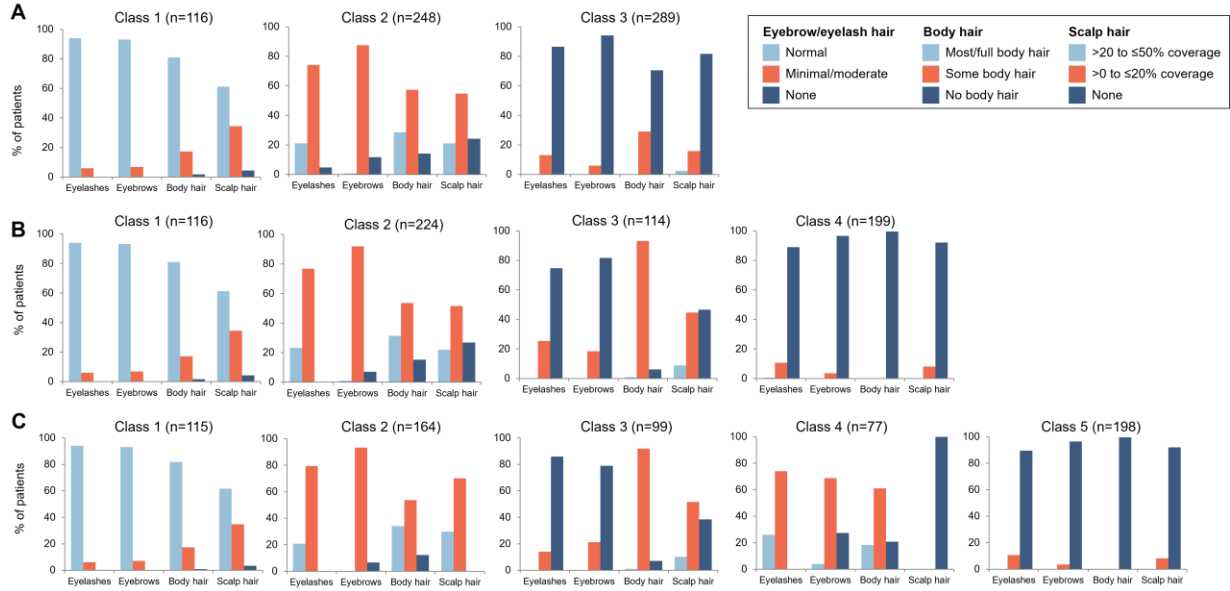
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**Supplemental Figure 1.** Distribution of indicator variables within the classes identified by latent class analysis for the A) 3-class, B) 4-class, and C) 5-class models

Supplemental Figure 1



**Supplementary Table 1.** List of participating Institutional Review Boards (IRBs) or Ethics Committees (ECs)

Study Site Number	Independent EC or IRB
<b>Argentina</b>	
1046	Centro de Investigaciones Metabolicas Comite de Etica en Investigacion Pres. J. E. Uriburu 754, 3rd Floor, office 12 CABA, BUENOS AIRES C1027AAP
1047	Comite Independiente de Etica para Ensayos en Farmacologia Clinica Fundacion de Estudios Farmacologicos y de Medicamentos "Prof.Luis M. Zieher" J.E. Uriburu 774 1st Floor CABA, C1280AEB
<b>Australia</b>	
1028, 1029, 1030, 1031, 1079, 1104	Bellberry Limited Human Research Ethics Committee 123 Glen Osmond Road Eastwood, South Australia 5063
1139	Monash Health Human Research Ethics Committee 246 Clayton Road, Monash Medical Centre Clayton, VIC 3168
<b>Canada</b>	
1011, 1012, 1032, 1035, 1039, 1041, 1045, 1100	Western Institutional Review Board, Canada 601 West Broadway, Suite 400 Vancouver, BC V5Z 4C2
1027	University of Manitoba (BREB) Research Ethics - Bannatyne P126 - 770 Bannatyne Avenue Winnipeg, MB R3E 0W3
1042	Nova Scotia Health Authority Research Ethics Board Centre for Clinical Research 5790 University Ave, Room 118 Halifax, NS B3H 1V7
<b>Chile</b>	
1050, 1052, 1111	Comite Etico Cientifico Servicio de Salud Metropolitano Norte Calle San Jose 1053, Independencia Santiago, REGION METROPOLITANA 8380755
1051	Comite Etico Cientifico Hospital Dr. Gustavo Fricke Servicio de Salud Vina del Mar - Quillota Calle Limache 1307 Esquina Peñablanca 2° piso Vina del Mar, VALPARAISO 2520563
<b>China</b>	
1053	Medical Ethics Committee of The University of Hong Kong-Shenzhen Hospital No.1, Haiyuan Road, Futian District Shenzhen, GUANGDONG 518053
1054	The First Affiliated Hospital With Nanjing Medical University Ethics Committee No. 300 Guangzhou Road Nanjing, JIANGSU 210029
1055	Peking University First Hospital Biological and Medical Research Ethics Committee No.6, Dahongluochang Street, Xicheng District Beijing, BEIJING 100034
1087	Huashan Hospital Fudan University Ethics Committee No.12 Wulumuqi Zhong Road Shanghai, SHANGHAI 200040
1089	EC on Clinical drugs, Equipment and New Medical Technologies of The First Affiliated Hospital, Sun Yat-sen University Room 110, 1st floor, Dragon Pearl Building, No.5 ZhuSigang 2nd Road Guangzhou, GUANGDONG 510080
1090	EC of The Second Affiliated Hospital of Zhejiang University School of Medicine No. 88 Jiefang Road Hangzhou, ZHEJIANG 310009
1170	Peking University Third Hospital Medical Science Research Ethics Committee No. 49 North Huayuan Road, Haidian District Beijing, BEIJING 100191
1177	Huazhong University of Science and Technology Clinical Trial Ethics Committee No. 13 Hangkong Road Wuhan, HUBEI 430030
1186	Ethics Committee of Ruijin Hospital Affiliated to Shanghai Jiaotong University School of Medicine No.197 Ruijin Er Road Shanghai, 200025

1187	Ethics Committee of Beijing Friendship Hospital, Capital Medical University Yong An Road, Xicheng District, No. 95 Beijing, 100050
1188	EC of The First Affiliated Hospital of College of Medicine, Zhejiang University No.79 Qingchun Road Hangzhou, ZHEJIANG 310003
<b>Colombia</b>	
1056	Comite de Etica de la Investigacion de Riesgo de Fractura S.A. Carrera 20B No. 74 - 46 Bogota, D.C.
1059	Comite de Etica para la Investigacion Clinica CEIC de la Fundacion Centro de Investigacion Clinica CIC Carrera 43 A # 7-50A Of. 309 Medellin, ANTIOQUIA 050001
1073	Comite de etica de la investigacion de la Fundacion Hospitalaria San Vicente de Paul Calle 64 # 51d-154 bloque 11 Medellin, ANTIOQUIA 050010
<b>Czech Republic</b>	
1060, 1071, 1080, 1137, 1153, 1165	Eticka komise pro multicentricka klinicka hodnoceni Fakultni nemocnice Kralovske Vinohrady Srobarova 50 Praha 10, 100 34
1071	Eticka komise pri NZZ CLINTRIAL s.r.o Pocernicka 1427/16 Praha 10, 100 00
1080	Eticka komise Nemocnice Na Bulovce Budinova 2 Praha 8, 180 81
1137	Eticka komise Fakultni nemocnice Hradec Kralove Sokolska 581 Hradec Kralove, 500 05
1153	Eticka komise Fakultni nemocnice Olomouc a Lekai'ske fakulty UP v Olomouci I.P. Pavlova 185/6 Olomouc, 779 00
1165	Eticka komise Fakultni nemocnice u sv. Anny v Brne Pekarska 53 Brno, 656 91
<b>Germany</b>	
1064, 1066, 1096, 1143, 1154, 1160	Ethikkommission der Universitaet zu Luebeck Haus 2, Ratzeburger Allee 160 Luebeck, 23562
<b>Hungary</b>	
1144, 1145, 1146, 1152	Egeszsegugyi Tudomanyos Tanacs Klinikai Farmakologiai Etikai Bizottsaga Szechenyi Istvan ter 7-8 Budapest, 1051
<b>Japan</b>	
1091	Tokyo Medical University Hospital IRB 6-7-1, Nishishinjuku Shinjuku-ku, TOKYO 160-0023
1092	Juntendo Tokyo Koto Geriatric Medical Center Institutional Review Board 3-3-20, Shinsuna Koto-ku, TOKYO 136-0075
1094	Hamamatsu University Hospital, Institutional Review Board 1-20-1 Handayama, Higashi-ku Hamamatsu, SHIZUOKA 431-3192
1117	Nagoya City University Hospital Medical Research Institutional Review Board Kawasumi 1, Mizuho-cho, Mizuho-ku Nagoya, AICHI 467-8602
1169	Osaka City University Hospital Institutional Review Board 1-5-7 Asahi-machi, Abeno-ku Osaka, OSAKA 545-8586
1183	Tohoku University Hospital Institutional Review Board 1-1 Seiry-cho, Aoba-ku Sendai, MIYAGI 980-8574
<b>Republic of Korea</b>	
1120	Pusan National University Hospital Institutional Review Board 187, Gudeok-ro, Seo-gu, 3F, S Building

	Busan, 49241
1123	Seoul National University Hospital Institutional Review Board 101 Daehak-ro, Jongno-gu Seoul, 03080
1140	The Catholic University of Korea, Eunpyeong St. Mary's Hospital Institutional Review Board 1021, Tongil-ro, Eunpyeong-gu Seoul, 03312
<b>Mexico</b>	
1182	Comité de Ética en Investigación de Sociedad Administradora de Salud S.C. Calle Nicolas Bravo N°50 Col. Chapultepec Norte Morelia, MICHOACAN C.P.58260
<b>Poland</b>	
1098, 1102, 1106, 1107, 1108, 1109	Komisja Bioetyczna przy Okregowej Izbie Lekarskiej w Lodzi ul. Czerwona 3 Lodz, 93-005
<b>Russian Federation</b>	
1068	Independent Ethics Committee of SPb SBHI Dermatovenerologic Dispensary No 10 - Clinic of Dermatology and Venereology 29, lit. A, Parkhomenko prospekt Saint Petersburg, 194021
1069	Local Independent Ethics Committee of FSBEI HE Rostov State Medical University MoH RF 29, Nakhichevansky per. Rostov-on-Don, 344022
1070, 1116	Independent Ethics Committee of "Pierre Volkenshtein Skin Diseases Clinic" LLC 24, lit. A, premises 1H., Ryleeva str., Saint Petersburg, 191123
1115	Local Ethics Committee of SBHI Chelyabinsk Regional Clinical Dermatovenerologic Dispensary 24, Yablochkina str., Chelyabinsk, 454048
1136	Ethics Committee of SAHI YR Clinical Emergency Hospital n.a.N.V Solovyev 11 Zagorodny Sad str Yaroslavl, 150003
1155	Interuniversity Ethics Committee Delegatskaya str., 20, bld. 1 Moscow, 127473
1156	Local Independent Ethics Committee of FSAI NMRCC MoH RF 2, bld 1, Lomonosovsky pr. Moscow, 119991
1162	Local Ethics Committee of FSBEI HE Kirov SMU MOH Russia 163, Moskovskaya str Kirov, 610048
<b>Spain</b>	
1112, 1113, 1114, 1119, 1121, 1129, 1130	CEIm Hospital Universitari Germans Trias i Pujol Ctra de Canyet s/n Badalona, BARCELONA 08916
<b>Taiwan</b>	
1074, 1075, 1076, 1077, 1081, 1082	Taipei Medical University Joint Institutional Review Board 17F., No.172-1, Sec. 2, Keelung Rd. Daan Dist. Taipei City, 10675
1074	Chung Shan Medical University Hospital Institutional Review Board No.110, Sec. 1, Chien-Kuo North Road Taichung, 40201
1075	Chang Gung Medical Foundation Institutional Review Board No. 199, Tung Hwa North Road Taipei, 10507
1077, 1081	National Taiwan University Hospital Research Ethics Committee No. 7, Chung-Shan South Road, R.O.C. Taipei, 100
1082	Kaohsiung Medical University Chung-Ho Memorial Hospital Institutional Review Board No. 100, Tzyou 1st Road Kaohsiung, 807
<b>United Kingdom</b>	
1134, 1135, 1138, 1147, 1175	Yorkshire & The Humber - Sheffield Research Ethics Committee NHSBT Newcastle Blood Donor Centre Holland Drive

	Newcastle upon Tyne, NE2 4NQ
<b>United States</b>	
1001, 1006, 1010, 1013, 1014, 1015, 1024, 1085, 1099	WESTERN INSTITUTIONAL REVIEW BOARD 1019 39th Ave SE, Ste 120 Puyallup, WA 98374-2115
1002, 1003, 1004, 1005, 1007, 1008, 1026, 1037, 1038, 1084, 1095, 1097, 1133, 1157	Copernicus Group Independent Review Board 5000 CentreGreen Way, Ste 200 Cary, NORTH CAROLINA 27513
1009	Human Research Protection Program, University of Minnesota 200 Oak St SE, Ste 350-2 Minneapolis, MN 55455
1017	Kaiser Permanente Northern California Institutional Review Board 1800 Harrison St., 10th Fl Oakland, CA 94612
1022	University of California, San Francisco, Human Research Protection Program 3333 California St, Ste 315 San Francisco, CA 94118
1078	Northwestern University Institutional Review Board 750 N Lake Shore Dr, Ste 700 Chicago, ILLINOIS 60611
1131	NYU School of Medicine Institutional Review Board 1 Park Ave, 6th Fl New York, NY 10016
1132	University of Iowa IRB, Human Subject Office 600 Newton Rd, 105 Hardin Library for the Health Sciences Iowa City, IA 52242
1142	Cleveland Clinic IRB 9500 Euclid Ave, OS-1 Cleveland, OH 44195
1149	Springfield Committee for Research Involving Human Subjects 201 E. Madison St Springfield, ILLINOIS 62702

**Supplementary Table 2.** Clinician- and Patient-Reported Outcome Measures, Description, and Response Scale/Scoring

Outcome Measure	Response Scale/Scoring/Questionnaire
<b>Severity of Alopecia Tool (SALT)</b>	
<ul style="list-style-type: none"> <li>▪ Clinician assessment of the amount of scalp hair loss [1]</li> </ul>	<ul style="list-style-type: none"> <li>▪ 0 (no scalp hair loss) to 100 (complete scalp hair loss)</li> </ul>
<b>Eyebrow Assessment (EBA)</b>	
<ul style="list-style-type: none"> <li>▪ Patients with EBA scores of 0-3 at baseline were included in the EBA assessments throughout the study</li> </ul>	<ul style="list-style-type: none"> <li>▪ 0 = <b>None</b> (no eyebrow hair)</li> <li>▪ 1 = <b>Minimal</b> eyebrow (normal or decreased density of 1 or both eyebrows with large gap[s] <b>or</b> severely decreased density of 1 or both eyebrows with or without gap[s])</li> <li>▪ 2 = <b>Moderate</b> eyebrow (normal density of both eyebrows with short gap[s] that does not significantly distort the appearance of the eyebrows <b>or</b> mildly decreased density of eyebrows with or without short gap[s] <b>or</b> moderately decreased density of eyebrows without short gaps[s]. There is a visual definition of eyebrows at a distance of 3 feet)</li> <li>▪ 3 = <b>Normal</b> eyebrow (normal density of both right and left eyebrows spanning usual length (ie, from glabella to near temple) and width. There are no gaps)</li> </ul>
<b>Eyelash Assessment (ELA)</b>	
<ul style="list-style-type: none"> <li>▪ Patients with ELA scores of 0-3 at baseline were included in the ELA assessments throughout the study</li> </ul>	<ul style="list-style-type: none"> <li>▪ 0 = <b>None</b> (no eyelash hair)</li> <li>▪ 1 = <b>Minimal</b> eyelash (modestly or severely decreased density of and/or large gap[s] in 1 or both upper eyelashes)</li> <li>▪ 2 = <b>Moderate</b> eyelash (normal density of both upper eyelashes without gap[s] and decreased density or</li> </ul>

Outcome Measure	Response Scale/Scoring/Questionnaire
	<p>gap[s] is present in one or both lower eyelashes <b>or</b> normal density of both upper eyelashes with short gap[s] <b>or</b> mildly decreased density of one or both upper eyelashes with or without short gap[s])</p> <ul style="list-style-type: none"> <li>▪ 3 = <b>Normal</b> eyelash (normal density of both right and left upper and lower eyelashes from near medial canthus to near lateral canthus without any gap[s])</li> </ul>
<b>Alopecia Areata Patient Priority Outcomes (AAPPO)</b>	
<ul style="list-style-type: none"> <li>▪ The AAPPO assesses AA-related hair loss in different body areas (scalp, eyebrows, eyelashes, and body), emotional symptoms, and activity limitations using 5-point scales <ul style="list-style-type: none"> <li>○ Hair loss on the scalp (item 1)</li> <li>○ Hair loss on the eyebrows (item 2)</li> <li>○ Hair loss on the eyelashes (item 3)</li> <li>○ Hair loss on the body (item 4)</li> <li>○ The Emotional Symptoms domain, computed as the mean of items 5-8 with the requirement that <math>\geq 2</math> items have non-missing responses (range, 0-4 points)</li> <li>○ The Activity Limitations domain, computed as the mean of items 9-11 with the requirement that <math>\geq 2</math> items have non-missing responses (range, 0-4 points)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ The 4 hair loss items use a contemporaneous recall period and a 5-point verbal response scale ranging from 0 (no hair loss) to 4 (complete hair loss)</li> <li>▪ The impact items assess 4 emotional symptoms and 3 activity limitations using a 1-week recall period and 2 different 5-point verbal response scales. The 4 items from the Emotional Symptoms domain use never (0), rarely (1), sometimes (2), often (3), and always (4). The 3 items from the Activity Limitations domain use not at all (0), a little (1), moderately (2), a great deal (3), and completely (4).</li> <li>▪ Negative change scores indicate improvement</li> </ul>
<b>Patient Global Impression of Change (PGI-C) (v1.0)</b>	
<p>PGI-C is a self-reported, single-item scale in which patients rate the improvement or worsening of AA compared with the start of the study, using a scale of 7 responses ranging from “greatly improved” to “greatly worsened”</p>	<ul style="list-style-type: none"> <li>▪ Questionnaire: Since the start of the study, my alopecia areata has: <ul style="list-style-type: none"> <li>○ Greatly improved</li> <li>○ Moderately improved</li> <li>○ Slightly improved</li> <li>○ Not changed</li> <li>○ Slightly worsened</li> <li>○ Moderately worsened</li> <li>○ Greatly worsened</li> </ul> </li> </ul>



Outcome Measure	Response Scale/Scoring/Questionnaire
<b>Patient Satisfaction with Hair Growth (P-Sat)</b>	
<ul style="list-style-type: none"> <li>▪ P-Sat assesses patient satisfaction with hair regrowth since the start of the study in 3 domains: amount, quality, and overall satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Questionnaire, for each question below: <ul style="list-style-type: none"> <li>▪ How satisfied are you with the <b>amount</b> of hair that has grown back since the start of the study?</li> <li>▪ How satisfied are you with the <b>quality</b> of the new hair regrowth you have experienced since the start of the study?</li> <li>▪ How satisfied <b>overall</b> are you with the hair that has grown back since the start of the study? <ul style="list-style-type: none"> <li>○ Very satisfied</li> <li>○ Moderately satisfied</li> <li>○ Slightly satisfied</li> <li>○ Neither satisfied nor dissatisfied</li> <li>○ Slightly dissatisfied</li> <li>○ Moderately dissatisfied</li> <li>○ Very dissatisfied</li> </ul> </li> </ul> </li> </ul>

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AAPPO, Alopecia Areata Patient Priority Outcomes; EBA, Eyebrow Assessment; ELA, Eyelash Assessment; PGI-C, Patient Global Impression of Change; P-Sat, Patient Satisfaction With Hair Growth.

1. Olsen EA, Hordinsky MK, Price VH, et al. Alopecia areata investigational assessment guidelines—part II. National Alopecia Areata Foundation. *J Am Acad Dermatol.* 2004;51:440-447.

**Supplementary Table 3.** Fit and diagnostic statistics for latent class models from 2 to 9 classes

<b>Number of classes</b>	<b>LLIK</b>	<b>AIC</b>	<b>BIC</b>	<b>CAIC</b>	<b>SABIC</b>	<b>Relative Entropy</b>	<b>Smallest ALCPP</b>
2	-2256.650	4547.301	4623.488	4640.488	4977.259	0.882	0.949
3	-2126.402	4304.805	4421.326	4447.326	4962.388	0.869	0.935
4	-2100.508	4271.016	4427.871	4462.871	5156.224	0.817	0.811
5	-2092.241	4272.482	4469.672	4513.672	5385.316	0.848	0.784
6	-2088.361	4282.721	4520.245	4573.245	5623.179	0.847	0.780
7	-2084.662	4293.325	4571.183	4633.183	5861.408	0.831	0.623
8	-2082.958	4307.915	4626.107	4697.107	6103.623	0.880	0.736
9	-2081.134	4322.268	4680.794	4760.794	6345.601	0.839	0.645

AIC, Akaike information criterion; ALCPP, average latent class posterior probability; BIC, Bayesian information criterion; CAIC, consistent AIC; LLIK, log-likelihood; SABIC, sample size-adjusted BIC.