Results: As compared with those of HCs, patients with SLE had lower absolute numbers of total T, NK, and CD4⁺T but higher proportions of all lymphocyte subpopulations except NK, CD4⁺T cells ($P < 0.001$) (Figure 1 A, C). Notably, the absolute numbers and proportions of Tregs as well as Th1 in CD4⁺T subsets were decreased ($P < 0.05$) (Figure 1 B, D). Further, there was a significant increase in the ratio of Tregs/Tregs such as Th1/Tregs, Th2/Tregs and Th17/Tregs ($P < 0.05$) (Figure 1 E). After receiving immunoregulatory combination therapies, the absolute numbers and proportions of T, NK, CD4⁺T, and CD8⁺T were increased, while the proportion of B cells was decreased (Figure 2 A, C); the absolute numbers of most CD4⁺T subsets as well as the proportions of only Th1 and Tregs were significantly increased ($P < 0.001$) (Figure 2 B, D). The ratios of Th1/Th2 and Th1/Tregs increased while that of Th17/Tregs and Th2/Tregs decreased ($P < 0.01$) (Figure 2 E).

Conclusion: Quantitative and functional alterations of peripheral lymphocyte subsets, especially reduced Tregs, play crucial roles in the pathogenesis of the patients. Immunoregulatory combination therapies mainly promote the proliferation and functional recovery of Tregs to rebalance pro- and anti-inflammatory T cells in patients with SLE for patients' symptoms remission.

References:

- [1] Sharabi A, Tsokos GC. T cell metabolism: new insights in systemic lupus erythematosus pathogenesis and therapy. *Nat Rev Rheumatol* 2020 doi: 10.1038/s41584-019-0356-x [published Online First: 2020/01/18]
- [2] Durcan L, O'Dwyer T, Petri M. Management strategies and future directions for systemic lupus erythematosus in adults. *Lancet* 2019;393(10188):2332-43. doi: 10.1016/S0140-6736(19)30237-5 [published Online First: 2019/06/11]
- [3] Spolski R, Li P, Leonard WJ. Biology and regulation of IL-2: from molecular mechanisms to human therapy. *Nat Rev Immunol* 2018;18(10):648-59. doi: 10.1038/s41577-018-0046-y [published Online First: 2018/08/10]

Figure 1: Comparison of absolute numbers of lymphocyte subsets in peripheral blood between healthy individuals ($n=206$) and SLE patients ($n=985$). All the lymphocytes subsets were analyzed by detected by flow cytometry combined with standard absolute counting beads. Data were presented as mean±SD and statistical analysis was determined by two-tailed unpaired t-test. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Acknowledgments : None.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.1867

SAT0182 THE ASSOCIATION BETWEEN AUTOANTIBODIES AND RITUXIMAB RESPONSE IN SYSTEMIC LUPUS ERYTHEMATOSUS

D. Li¹, H. Lu¹, J. Dunphy², T. Smith¹, E. Vital^{3,4}, I. N. Bruce⁵, N. Mchugh¹. ¹The University of Bath, Pharmacy and Pharmacology, Bath, United Kingdom; ²Royal United Hospital Bath NHS Foundation Trust, Bath, United Kingdom; ³The University of Leeds, Leeds Institute of Rheumatic and Musculoskeletal Disease, Leeds, United Kingdom; ⁴Leeds Teaching Hospitals NHS Trust, NIHR Leeds Biomedical Research Centre, Leeds, United Kingdom; ⁵The University of Manchester, Centre for Epidemiology Versus Arthritis, Faculty of Biology Medicine and Health, Manchester, United Kingdom

Background: Systemic Lupus Erythematosus (SLE) is clinically and immunologically heterogeneous with a variable response to treatment. MASTERPLANS is an MRC-funded consortium that seeks to identify immunophenotypic subgroups of patients that predict response to therapy. Autoantibody profiles can differentiate subgroups of patients and have potential to predict response to treatment.

Objectives: To determine whether known and novel autoantibodies are associated with response to rituximab (RTX), and analyse the association between these antibodies and disease involvement in various organ systems.

Methods: Serum was obtained from 224 SLE patients in the BILAG Biologics Registry who received rituximab according to NICE England criteria (2). Patients were recruited if they were starting a first cycle of rituximab for active SLE (BILAG A or 2xBILAG B) despite previous cyclophosphamide or mycophenolate mofetil.

Evidence of any single organ system involvement previous or current was taken as having a BILAG score of A-D but not E. Disease activity was measured using BILAG-2004. Clinical response was defined as improvement by ≥ 1 grade in active BILAG-2004 systems with no worsening in other systems. Autoantibodies were measured by immunoprecipitation of proteins by sera from ³⁵S-labelled K562 cell lines, followed by SDS-PAGE separation and autoradiography. Autoantibodies not able to be detected by this technique (anti-Ro52, anti-dsDNA and aCL) were measured by ELISA. Autoantibody data was analysed in IBM SPSS and GraphPad Prism v8.2. Association between autoantibodies and RTX response was analysed using binary logistic interaction terms and Pearson's Chi-Square test.

Results: Of the 224 patients (201 female, 23 male, median age 40 years) the most common system involvement from the 9 BILAG domains was musculoskeletal (164 patients) and the least ophthalmic (11 patients). Patients with anti-Ro52 and anti-U1RNP/Sm had more frequent involvement of mucocutaneous ($p < 0.036$, $p < 0.012$) and musculoskeletal domains ($p < 0.015$ for U1RNP) respectively. There were 136 patients with sufficient data to define as either responders ($n=67$) or non-responders ($n=69$) to RTX at 6 months. RTX responders had a higher frequency of anti-U1RNP/Sm compared to non-responders (Figure 1). Further Pearson's Chi-Square analysis showed a significant association between presence of anti-U1RNP/Sm and better response to RTX ($p < 0.018$).

Figure 2: Changes of peripheral lymphocyte subsets after immunomodulatory combination therapy ($n=795$). Data were presented as mean±SD and statistical analysis was determined by two-tailed paired t-test. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Conclusion: Our findings suggest that the presence of U1RNP/Sm autoantibodies in a cohort of patients who have received treatment with RTX is associated with more frequent musculoskeletal and mucocutaneous involvement and predicts a more favourable response to treatment.

Acknowledgments : Funded by a grant from the Medical Research Council, grant number MR/M01665X/1. BILAG BR has been funded by unrestricted educational donations from Roche, GSK and LUPUS UK. Part-funded by a grant from LUPUS UK.

Disclosure of Interests : Danyang Li: None declared, Hui Lu: None declared, Juliet Dunphy: None declared, Theresa Smith: None declared, Edward Vital Grant/research support from: AstraZeneca, Roche/Genentech, and Sandoz, Consultant of: AstraZeneca, GSK, Roche/Genentech, and Sandoz, Speakers bureau: Becton Dickinson and GSK, Ian N. Bruce Grant/research support from: Genzyme Sanofi, GSK, and UCB, Consultant of: Eli Lilly, AstraZeneca, UCB, Ilto, and Merck Serono, Speakers bureau: UCB, Neil Mchugh: None declared

DOI: 10.1136/annrheumdis-2020-eular.4284

SAT0183 STATUS OF LYMPHOCYTE SUBSETS IN PERIPHERAL BLOOD OF PATIENTS WITH PRIMARY SJÖGREN'S SYNDROME AND THEIR CHANGES AFTER RECEIVING OUR NEW IMMUNOREGULATORY COMBINATION THERAPY: A RETROSPECTIVE CROSS-SECTIONAL STUDY

J. Y. Yang¹, S. X. Zhang², L. Hao², Q. Y. Su¹, J. Bai¹, S. J. Guo¹, J. Luo², G. Y. Liu², C. Gao³, X. Li². ¹Shanxi Medical University, Taiyuan, China; ²The Second Hospital of Shanxi Medical University, Taiyuan, China; ³Brigham and Women's Hospital, Harvard Medical School, Boston, United States of America

Background: Primary Sjögren's syndrome (pSS) is a chronic inflammatory autoimmune disease mainly involving exocrine glands and involving multiple organs and systems¹. Recent studies have reported that peripheral lymphocyte subsets such as Th1, Th2, Th17, and regulatory cells (Tregs), have been implicated in the pathogenesis of pSS². However, the detailed statuses of lymphocyte subsets of pSS patients remain to be clearly evaluate and effects of immunomodulatory therapies on the lymphocyte subsets are unknown.