

Biographical Sketch and List of Selected Publications within last 5 years, June 2019

NAME SØREN JACOBSEN DOB: 28MAR1961		POSITION TITLE PROFESSOR, MD, DMSc (PhD)	
EDUCATION/TRAINING.			
INSTITUTION AND LOCATION	DEGREE (IF APPLICABLE)	YEAR(S)	FIELD OF STUDY
Faculty of Health Sciences University of Copenhagen DK-2100 Copenhagen, Denmark	MD DMSc Clinical professor	1981-88 1994 2011	Medicine Doctoral dissertation Rheumatology
The Danish Health Authority Islands Brygge 67 DK-2300 Copenhagen, Denmark	Specialty licensed Specialty licensed	1997 1999	Rheumatology Internal Medicine
RESEARCH AND PROFESSIONAL EXPERIENCE.			
<u>EMPLOYMENTS:</u>			
1983-1988 Clinical assisting medical student, Association of Danish Medical Students, Copenhagen. 1988-1992 Intern at various medical and surgical departments in the Copenhagen area 1993-1995 Rheumatology training, Rigshospitalet, Copenhagen 1995-1997 Staff specialist in rheumatology, Dep. of Rheumatology, Hvidovre Hospital, Copenhagen 1997-1998 Staff specialist in internal medicine, Department of Medicine, Helsingør Hospital 1998-1999 Staff specialist in rheumatology, Dep. of Rheumatology, Hvidovre Hospital, Copenhagen 1999-2002 Chief physician, Department of Rheumatology, Hvidovre Hospital, Copenhagen 2002-2004 Head of Department, Department of Rheumatology, Bispebjerg Hospital, Copenhagen 2004-2015 Head of Department, Department of Rheumatology, Rigshospitalet, Copenhagen 2015-now Chief physician, Department of Rheumatology, Rigshospitalet, Copenhagen			
<u>EXPERIENCE:</u>			
<u>Academic Positions:</u>			
1986-1987 Danish Rheumatism Association Scholar, Department of Rheumatology, Hvidovre Hospital, Copenhagen and Department of Clinical Medicine, University of Copenhagen 1995-1999 Assistant professor, Department of Clinical Medicine, University of Copenhagen 1999-2011 Associate professor, Department of Clinical Medicine, University of Copenhagen 2013-2015 Coordinating professor, Institute of Clinical Medicine, University of Copenhagen 2011-now Clinical professor, Department of Rheumatology, Rigshospitalet, University of Copenhagen 2014-now Course Leader, Rheumatology bachelor level, Department of Clinical Medicine, University of Copenhagen			

RESEARCH AND PROFESSIONAL EXPERIENCE (CONTINUED).

National Leadership Roles:

- 1997-1999 Board member, The Danish Society of Rheumatology
- 1999-now Executive board member, The Danish Rheumatism Association, Copenhagen
- 1999-now Several positions in evaluation boards assessing applicants for positions as chief physician to according to The Danish Health Authority
- 1999-now Several positions in evaluation boards assessing applicants for positions as clinical professor, Institute of Clinical Medicine, University of Copenhagen
- 2015-now Member of the Danish Medico-Legal Counsel, Viborg, Denmark [Government advisory committee]

International Leadership Roles:

- 1997-1999 Corresponding Editor for Denmark, “Rheumatology in Europe“, European League Against Rheumatism
- 2009-2014 Board member, Research Networking Programme “The identification of novel genes and biomarkers for systemic lupus erythematosus (BIOLUPUS), European Science Foundation
- 2012-2014 Board member of Scandinavian Society of Rheumatology
- 2012-2014 Editorial board member “Scandinavian Journal of Rheumatology”
- 2014-2014 Editorial board member “Rheumatology”
- 2015-2019 Chief Editor of “Scandinavian Journal of Rheumatology”
- 1994-now Member of Standing Committee on Epidemiology, European League Against Rheumatism
- 2014-now Editorial board member “Lupus Science and Medicine”
- 2017-now Chairman of the Membership Committee, Systemic Lupus International Collaborating Clinics
- 2017-now Member of ACR/EULAR systemic lupus erythematosus classification criteria workgroup
- 2019-now Member of EULAR taskforce on cardiovascular guidelines in inflammatory rheumatic diseases

National and International Grant Reviews and Committees:

- 1999-2007 Chairman of the Research Committee for The Danish Rheumatism Association, Copenhagen
- 2010-2011 Applicant reviewer, European Science Foundation
- 2014-now Member of the Research Committee for The Swedish Rheumatism Association, Stockholm
- 2015-now Member of the Research Committee for King Gustav V 80 years Foundation, Stockholm

Journal Review Service:

- 1990-now Ad Hoc Reviewer for the following journals:

Annals of the Rheumatic Diseases, Arthritis and Rheumatology, Clinical Rheumatology, Frontiers in Immunology, Human Immunology, Journal of Clinical Immunology, Journal of Internal Medicine, Journal of Rheumatology, Pain, Rheumatology, Scandinavian Journal of Medicine and Science in Sports, Scandinavian Journal of Immunology, Scandinavian Journal of Rheumatology, Seminars in Arthritis and Rheumatism and The Lancet.

RESEARCH AND PROFESSIONAL EXPERIENCE (CONTINUED).

HONORS:

2015 Danish Queen Ingrid's Research Prize, presented at the Royal Palace

MEMBERSHIPS:

Current Professional Memberships:

The Danish Society of Rheumatology

The Danish Society of Internal Medicine

The Danish Society of Thrombosis and Haemostasis

American College of Rheumatology

RESEARCH:

Research focus:

Systemic inflammatory autoimmune diseases (SIADs) with emphasis on SLE using methodologies that comprise epidemiology, clinical cohort studies, functional genetics, comorbidity, pathogenesis and laboratory studies of immunological dysfunction. My research group has strong collaborations with local, national and international networks as well as research institutions in London and Stanford. My research aims to identify genetic and environmental risk factors of SIADs, to identify prognosticators of severe sub-phenotypes and comorbidities in SIADs, and to identify therapy targets without the current adverse effect on immune function. I seek to achieve this by clinical, epidemiological and laboratory studies that increase the understanding of SLE pathogenesis with the view to translate the knowledge to other SIADs.

Research networks:

2005-2014 Member of EUSTAR (EULAR Scleroderma Trials and Research)

2009-2014 Member of BIOLUPUS research network programme by European Science Foundation

1995-now PI of the Danish Collaborative Lupus Network

2011-now Member of Systemic Lupus International Collaborating Clinics

2014-now Member of Scleroderma Clinical Trials Consortium

2018-now Member of the Scandinavian research network "DISSECT" on the role of interferons in autoimmunity

Academic supervision and evaluation:

Pregraduate supervisions for MD: 13

Postgraduate supervisions for PhD: 21

PhD evaluations, national: 28

PhD evaluations, international: 16

Publications:

Peer-reviewed research papers: 275

WoS H-index: 58

WoS Citations: 12,258

WoS Citations 2018: 1,461

WoS Publications cited >100 times: 29

LIST OF SELECTED PUBLICATIONS.

([FULL PUBMED LINK HERE](#)):

1. Hanly JG, O'Keefe AG, Su L, Urowitz MB, Romero-Diaz J, Gordon C, Bae SC, Bernatsky S, Clarke AE, Wallace DJ, Merrill JT, Isenberg DA, Rahman A, Ginzler EM, Fortin P, Gladman DD, Sanchez-Guerrero J, Petri M, Bruce IN, Dooley MA, Ramsey-Goldman R, Aranow C, Alarcón GS, Fessler BJ, Steinsson K, Nived O, Sturfelt GK, Manzi S, Khamashta MA, van Vollenhoven RF, Zoma AA, Ramos-Casals M, Ruiz-Irastorza G, Lim SS, Stoll T, Inanc M, Kalunian KC, Kamen DL, Maddison P, Peschken CA, **Jacobsen S**, Askanase A, Theriault C, Thompson K, Farewell V. The frequency and outcome of lupus nephritis: results from an international inception cohort study. **Rheumatology** 2016; 55:252-62. PMID: 26342222
2. Urowitz MB, Gladman DD, Anderson NM, Su J, Romero-Diaz J, Bae SC, Fortin PR, Sanchez-Guerrero J, Clarke A, Bernatsky S, Gordon C, Hanly JG, Wallace DJ, Isenberg D, Rahman A, Merrill J, Ginzler E, Alarcón GS, Fessler BF, Petri M, Bruce IN, Khamashta M, Aranow C, Dooley M, Manzi S, Ramsey-Goldman R, Sturfelt G, Nived O, Steinsson K, Zoma A, Ruiz-Irastorza G, Lim S, Kalunian KC, İnanc M, van Vollenhoven R, Ramos-Casals M, Kamen DL, **Jacobsen S**, Peschken C, Askanase A, Stoll T. Cardiovascular events prior to or early after diagnosis of systemic lupus erythematosus in the systemic lupus international collaborating clinics cohort. **Lupus Sci Med** 2016 Apr 12;3:e000143. PMID: 27099765
3. Nielsen CT, Rasmussen NS, Heegaard NHH, **Jacobsen S**. "Kill" the messenger: Targeting of cell-derived microparticles in lupus nephritis. **Autoimmunity Rev** 2016;15:719-25. PMID: 26970484
4. Hanly JG, Su L, Urowitz MB, Romero-Diaz J, Gordon C, Bae SC, Bernatsky S, Clarke AE, Wallace DJ, Merrill JT, Isenberg DA, Rahman A, Ginzler EM, Petri M, Bruce IN, Dooley MA, Fortin P, Gladman DD, Sanchez-Guerrero J, Steinsson K, Ramsey-Goldman R, Khamashta MA, Aranow C, Alarcón GS, Fessler BJ, Manzi S, Nived O, Sturfelt GK, Zoma AA, van Vollenhoven RF, Ramos-Casals M, Ruiz-Irastorza G, Sam Lim S, Kalunian KC, Inanc M, Kamen DL, Peschken CA, **Jacobsen S**, Askanase A, Theriault C, Farewell V. A Longitudinal Analysis of Outcomes of Lupus Nephritis in an International Inception Cohort Using a Multistate Model Approach. **Arthritis Rheumatol** 2016;68:1932-44. PMID: 26991067
5. Rasmussen NS, Nielsen CT, Houen G, **Jacobsen S**. Humoral markers of active Epstein-Barr virus infection associate with anti-extractable nuclear antigen autoantibodies and plasma galectin-3 binding protein in systemic lupus erythematosus. **Lupus** 2016;25:1567-1576. PMID: 27084029
6. Hermansen MLF, Lindhardsen J, Faurschou M, Torp-Pedersen C, **Jacobsen S**. Incidence of systemic lupus erythematosus and lupus nephritis in Denmark: A Nationwide Cohort Study. **J Rheumatol** 2016;43:1335-9. PMID: 27134247
7. Diederichsen LP, Simonsen JA, Diederichsen AC, Hvidsten S, Hougaard M, Junker P, Søndergaard K, Lundberg IE, Tvede N, Sandgaard NCF, Christensen AF, Dreyer L, Kay S, Eskerud KS, Petersen H, Ejstrup L, **Jacobsen S**. Cardiac Abnormalities in Adult Patients With Polymyositis or Dermatomyositis as Assessed by Noninvasive Modalities. **Arthritis Care Res** 2016; 68:1012-20. PMID: 26502301
8. Schreiber K, Lykke JA, Langhoff-Roos J, Nielsen HS, **Jacobsen S**. [Antiphospholipid syndrome and pregnancy]. **Ugeskr Laeger** 2016;178(3). Danish. PMID: 26815583
9. Schreiber K, Lykke JA, Nielsen HS, **Jacobsen S**. [Systemic lupus erythematosus and pregnancy]. **Ugeskr Laeger** 2016;178(31):1917-1920. Danish. PMID: 27506916
10. Von Vollenhoven R, Voskuyl A, Bertias G, Aranow C, Aringer M, Arnaud L, Askanase A, Balazova P, Bonfa E, Bootsma H, Boumpas D, Bruce I, Cervera R, Clarke A, Coney C, Costedoat-Chalumeau N, Czirkak L, Derksen R, Doria A, Dörner T, Fischer-Betz R, Fritsch-Stork R, Gordon C, Graninger W, Gyorfi N, Houssiau F, Isenberg D, **Jacobsen S**, Jayne D, Kuhn A, Le Guern V, Lerstrøm K, Levy R, Machado-Ribeiro F, Mariette X, Missaykeh J, Morand E, Mosca M, Inanc M, Navarra S, Neumann I, Olesinska M, Petri M, Rahman A, Rekvig OP, Rovinsky J, Shoenfeld Y, Smolen J, Tincani A, Urowitz M, van Leeuw B, Vasconcelos C, Voss A, Werth VP, Zakharova H, Zoma A, Schneider M, Ward M. A framework for remission in SLE: consensus findings from a large international task force on definitions of remission in SLE (DORIS). **Ann Rheum Dis** 2017; 76: 554-61. PMID: 27884822
11. Bernatsky S, Ramsey-Goldman R, Petri M, Urowitz MB, Gladman DD, Fortin PF, Ginzler E, Romero-Diaz J, Peschken C, **Jacobsen S**, Hanly JG, Gordon C, Nived O, Yelin EH, Isenberg D, Rahman A, Bae SC, Joseph L, Witte T, Ruiz-Irastorza G, Aranow C, Kamen D, Sturfelt G, Foulkes WD, Hansen JE, St Pierre Y, Raymer PC, Tessier-Cloutier B, Clarke AE. Breast cancer in systemic lupus. **Lupus** 2017; 26:311-5. PMID: 27687028
12. Tanha N, Pilely K, Faurschou M, Garred P, **Jacobsen S**. Plasma ficolin levels and risk of nephritis in Danish patients with systemic lupus erythematosus. **Clin Exp Rheumatol** 2017; 36:335-41. PMID: 27981461
13. Nielsen CT, Østergaard O, Rasmussen NS, **Jacobsen S**, Heegaard N. A review of studies of the proteomes of circulating microparticles: key roles for galectin-3-binding protein-expressing microparticles in vascular diseases and systemic lupus erythematosus. **Clin Proteomics** 2017;14:11. DOI 10.1186/s12014-017-9146-0. PMID: 28405179
14. Winberg LK, Nielsen CH, **Jacobsen S**. Surface complement C3 fragments and cellular binding of microparticles in patients with SLE. **Lupus Sci Med** 2017;4(1):e000193. doi: 10.1136/lupus-2016-000193. PMID: 28409016
15. Hermansen MLF, Lindhardsen J, Torp-Pedersen C, Faurschou M, **Jacobsen S**. The risk of cardiovascular morbidity and cardiovascular mortality in systemic lupus erythematosus and lupus nephritis: a Danish nationwide population-based cohort study. **Rheumatology** 2017; 56:709-15. PMID: 28053276
16. Nagel J, Saxne T, Geborek P, Bengtsson AA, **Jacobsen S**, Sverke Jørgensen C, Nilsson J-Å, Skattum L, Jönsen A, Kapetanovic MC. Treatment with belimumab in systemic lupus erythematosus does not impair antibody response to 13-valent pneumococcal conjugate vaccine. **Lupus** 2017;26(10):1072-1081. PMID: 28420056
17. Winberg LK, Jacobsen S, Nielsen CH. Microparticles from patients with systemic lupus erythematosus induce production of reactive oxygen species and degranulation of polymorphonuclear leukocytes. **Arthritis Res Ther** 2017;19(1):230. PMID: 29041967
18. Ulf-Møller CJ, Simonsen J, Kyvik KO, **Jacobsen S**, Frisch M. Family history of systemic lupus erythematosus and risk of autoimmune disease: Nationwide Cohort Study in Denmark 1977-2013. **Rheumatology** 2017; 56:957-64. PMID: 28339674

RESEARCH AND PROFESSIONAL EXPERIENCE (CONTINUED). PAGE LIMITATIONS APPLY. DO NOT EXCEED 5 PAGES FOR THE ENTIRE BIOGRAPHICAL SKETCH PER INDIVIDUAL.

19. Schreiber K, Breen K, Cohen H, **Jacobsen S**, Middeldorp S, Pavord S, Regan L, Roccatello D, Robinson SE, Sciascia S, Seed PT, Watkins L, Hunt BJ. Hydroxychloroquine to Improve Pregnancy Outcome in Women with Antiphospholipid Antibodies (HYPATIA) Protocol: A Multinational Randomized Controlled Trial of Hydroxychloroquine versus Placebo in Addition to Standard Treatment in Pregnant Women with Antiphospholipid Syndrome or Antibodies. **Semin Thromb Hemost** 2017;43:562-71. PMID: 28609801
20. Østergaard O, Nielsen C, Tanassi J, Iversen L, **Jacobsen S**, Heegaard N. Distinct proteome pathology of circulating microparticles in systemic lupus erythematosus. **Clin Proteom** 2017;14:23. PMID: 28649187 Poulsen K, Alexanderson H, Dalgård C, **Jacobsen S**, Weile L, Diederichsen Louise P. Quality of life correlates with muscle strength in patients with dermatomyositis or polymyositis. **Clin Rheumatol** 2017; 36(10):2289-2295. PMID: 28585061
21. Ferreira I, Croca S, Raimondo MG, Matharu M, Miller S, Giles I, Isenberg D, Ioannou Y, Hanly JG, Urowitz MB, Anderson N, Aranow C, Askanase A, Bae SC, Bernatsky S, Bruce IN, Buyon J, Clarke AE, Dooley MA, Fortin P, Ginzler E, Gladman D, Gordon C, Inanc M, **Jacobsen S**, Kalunian K, Kamen D, Khamashta M, Lim S, Manzi S, Merrill J, Nived O, Peschken C, Petri M, Ramsey-Goldman R, Ruiz-Irastorza G, Sanchez-Guerrero J, Steinsson K, Sturfelt GK, van Vollenhoven R, Wallace DJ, Zoma A, Rahman A. Nitrated nucleosome levels and neuropsychiatric events in systemic lupus erythematosus; a multi-center retrospective case-control study. **Arthritis Res Ther** 2017;19:287. PMID: 29273092
22. Isenberg D, Sturgess J, Allen E, Aranow C, Askanase A, Sang-Cheol B, Bernatsky S, Bruce I, Buyon J, Cervera R, Clarke A, Dooley Mary Anne, Fortin P, Ginzler E, Gladman D, Hanly J, Inanc M, **Jacobsen S**, Kamen D, Khamashta M, Lim S, Manzi S, Nived O, Peschken C, Petri M, Kalunian K, Rahman A, Ramsey-Goldman R, Ruiz-Irastorza G, Sanchez-Guerrero J, Steinsson K, Sturfelt G, Urowitz M, van Vollenhoven R, Wallace DJ, Zoma A, Merrill J, Gordon C. Study of Flare Assessment in Systemic Lupus Erythematosus Based on Paper Patients. **Arthritis Care Res** 2018;70:98-103. PMID: 28388813
23. Ulf-Møller C, Svendsen AJ, Viemose LN, **Jacobsen S**. Concordance of autoimmune disease in a nationwide Danish systemic lupus erythematosus twin cohort. **Sem Arthritis Rheum** 2018; 47:538-544. PMID: 28755788
24. Schreiber K, Sciascia S, de Groot P, Devreese K, **Jacobsen S**, Ruiz-Irastorza G, Salmon J, Shoenfeld Y, Shovman O, Hunt B. Antiphospholipid syndrome. **Nat Rev Dis Prim** 2018;11:4:17103. PMID: 29321641
25. Draborg AH, Rasmussen N, Larsen JL, Skogstrand K, Sandhu N, **Jacobsen S**, Houen G. Immune responses to an early lytic cytomegalovirus antigen in systemic lupus erythematosus patients: T-cell responses, cytokine secretions, and antibody status. **PlosOne** 2018;13(3):e0193244. PMID: 29499037
26. Little J, Parker B, Lunt M, Hanly J, Urowitz M, Clarke AE, Romero-Diaz J, Gordon C, Bae SC, Bernatsky S, Wallace D, Merrill J, Buyon J, Isenberg D, Rahman Anisur, Ginzler E, Petri M, Dooley M, Fortin P, Gladman D, Steinsson Kristjan, Ramsey-Goldman R, Khamashta M, Aranow C, Mackay M, Alarcon G, Manzi S, Nived O, Jönsen A, Zoma A, van Vollenhoven R, Ramos-Casals Manuel, Ruiz-Irastorza G, Lim S, Kalunian K, Inanc M, Kamen D, Peschken C, **Jacobsen S**, Askanase A, Sánchez-Guerrero J, Bruce I. Glucocorticoid use and factors associated with variability in this use in the Systemic Lupus International Collaborating Clinics Inception Cohort. **Rheumatology** 2018; 57(4):677-687. PMID: 29361147
27. Rasmussen NS, Jacobsen S. Microparticles - culprits in the pathogenesis of systemic lupus erythematosus? **Expert Rev Clin Immunol** 2018; 2018; 14:443-5. PMID: 29730959
28. Lilleker JB, Diederichsen ACP, **Jacobsen S**, Guy M, Roberts ME, Sergeant JC, Cooper RG, Diederichsen LP, Chinoy H. Using serum troponins to screen for cardiac involvement and assess disease activity in the idiopathic inflammatory myopathies. **Rheumatology** (Oxford) 2018; 57:1041-6. PMID: 29538753
29. Ulf-Møller C, Asmar F, Liu Y, Svendsen A, Busato F, Grønbaek K, Tost J, **Jacobsen S**. Twin DNA methylation profiling reveals flare-dependent interferon signature and B-cell promoter hypermethylation in systemic lupus erythematosus. **Arthritis Rheum** 2018; 70:878-90. PMID: 29361205
30. Tanha N, Hansen RB, Nielsen CT, Faurschou M, **Jacobsen S**. Clinical and Serological Associations with the Development of Incident Proteinuria in Danish Patients with Systemic Lupus Erythematosus. **J Rheumatol** 2018;45:934-41. PMID: 29657143
31. Leffers HCB, Hermansen ML, Sandholt B, Fuchs A, Sillesen H, Køber L, Kofoed KF, Faurschou M, **Jacobsen S**. Plasma levels of β 2-microglobulin are associated with atherosclerosis in patients with systemic lupus erythematosus: a cross-sectional cohort study. **Lupus** 2018;27:1517-23. PMID: 29954284
32. Hanly JG, Li Q, Su L, Urowitz MB, Gordon C, Bae SC, Romero-Diaz J, Sanchez-Guerrero J, Bernatsky S, Clarke AE, Wallace DJ, Isenberg DA, Rahman A, Merrill JT, Fortin P, Gladman DD, Bruce IN, Petri M, Ginzler EM, Dooley MA, Steinsson K, Ramsey-Goldman R, Zoma AA, Manzi S, Nived O, Jonsen A, Khamashta MA, Alarcón GS, Chatham W, van Vollenhoven RF, Aranow C, Mackay M, Ruiz-Irastorza G, Ramos-Casals M, Lim SS, Inanc M, Kalunian KC, Jacobsen S, Peschken CA, Kamen DL, Askanase A, Theriault C, Farewell V. Cerebrovascular Events in Systemic Lupus Erythematosus. **Arthritis Care Res** 2018;70:1478-87. PMID: 29316357
33. Hermansen MLF, Sandholt B, Fuchs A, Sillesen H, Køber L, Kofoed KF, Faurschou M, **Jacobsen S**. Atherosclerosis and renal disease involvement in patients with systemic lupus erythematosus: a cross-sectional cohort study. **Rheumatology** 2018; 57:1964-71. PMID: 30016488
34. Massarenti L, Enevold C, Damgaard D, Ødum N, Nielsen CH, **Jacobsen S**. Peptidylarginine deiminase-4 gene polymorphisms are associated with systemic lupus erythematosus and lupus nephritis. **Scand J Rheumatol** 2019; 48:133-40. PMID: 30269634
35. Hanly J, Li Q, Su L, Urowitz M, Gordon C, Bae SC, Romero-Diaz J, Sanchez-Guerrero J, Wallace D, Bernatsky S, Clarke A, Merrill Joan, Ginzler Ellen, Fortin Paul, Gladman Dafna, Bruce I, Isenberg D, Rahman A, Alarcón G, Petri M, Khamashta M, Dooley MA, Ramsey-Goldman R, Manzi S, Steinsson K, Zoma A, Aranow C, Mackay M, Ruiz-Irastorza G, Lim S, Inanc M, van Vollenhoven R, Jönsen A, Nived O, Ramos-Casals M, Kamen D, Kalunian K, **Jacobsen S**, Peschken C, Askanase A, Theriault C, Farewell V. Psychosis in Systemic Lupus Erythematosus. Results from an international, inception cohort study. **Arthritis Rheumatol** 2019; 71:281-9. PMID: 30375754
36. Leffers HCB, Lange T, Collins C, Ulf-Møller CJ, **Jacobsen S**. The study of interactions between genome and exposome in the development of systemic lupus erythematosus. **Autoimmunity Rev** 2019; epub Feb 14. PMID: 30772495