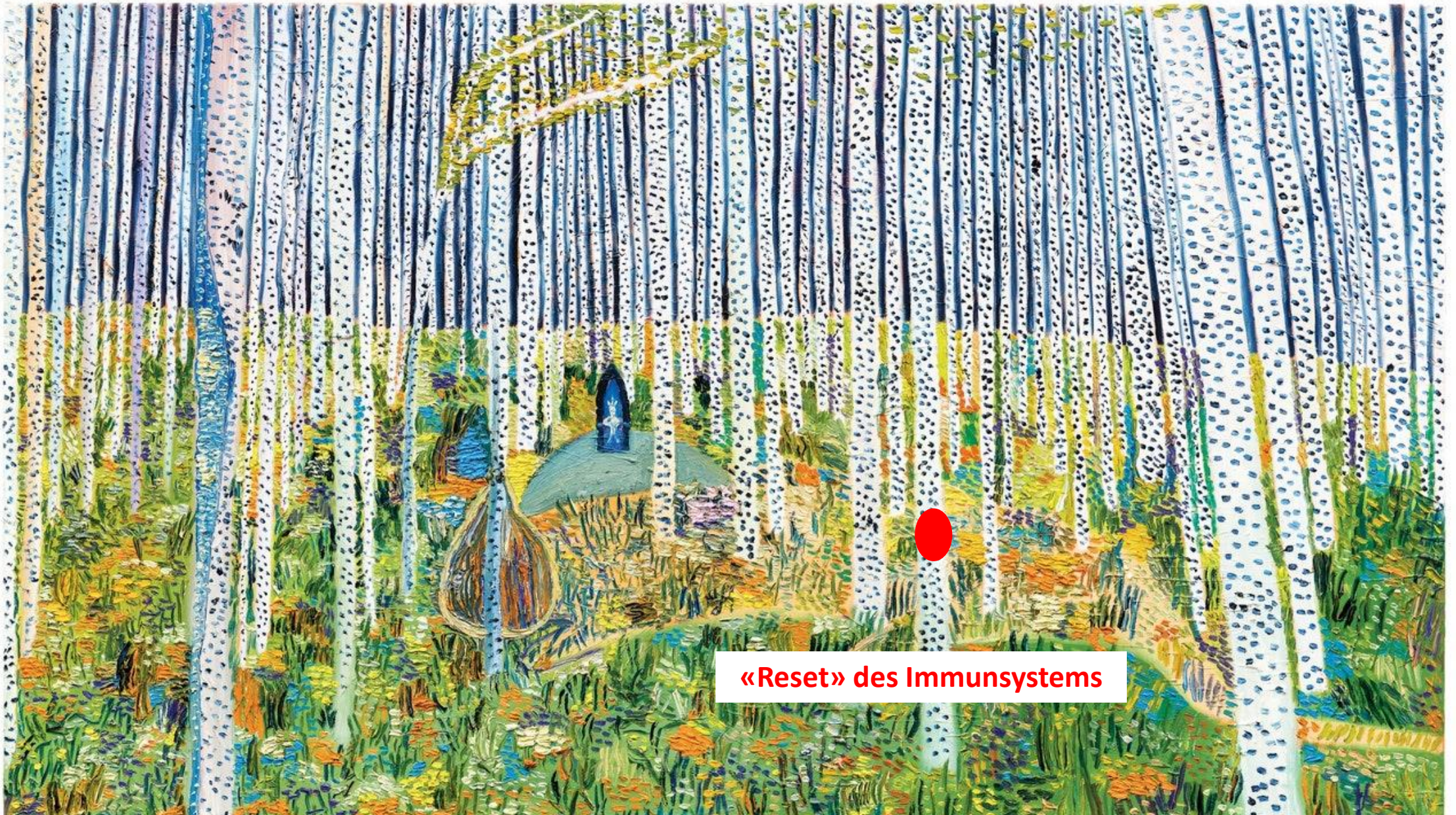




Die wichtigsten Publikationen 2024 in der Rheumatologie



«Reset» des Immunsystems

Stehen wir am Beginn der Ära der Heilung von Rheuma? CAR-T Zellen

ARTICLES

<https://doi.org/10.1038/s41591-022-02017-5>

nature
medicine

 Check for updates

Anti-CD19 CAR T cell therapy for refractory systemic lupus erythematosus

CD19-targeting CAR T-cell therapy in patients with diffuse systemic sclerosis: a case series

Janina Auth, Fabian Müller*, Simon Völkl, Nadine Bayerl, Jörg HW Distler, Carlo Tur, Maria G Raimondo, Sara Chenguiti Fakhouri, Armin Atzinger, Birte Coppers, Markus Eckstein, Anna-Maria Liphardt, Tobias Bäuerle, Koray Tascilar, Michael Aigner, Sascha Kretschmann, Andreas Wirsching, Jule Taubmann, Melanie Hagen, Andrea-Hermina Györfi, Soraya Kharboutli, Tobias Krickau, Clara Dees, Silvia Spörl, Tobias Rothe, Thomas Harrer, Aline Bozec, Ricardo Grieshaber-Bouyer, Florian Fuchs, Torsten Kuwert, Carola Berking, Raymund E Horch, Michael Uder, Andreas Mackensen, Georg Schett, Christina Bergmann*



The NEW ENGLAND
JOURNAL of MEDICINE

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VOL. 390 NO. 8

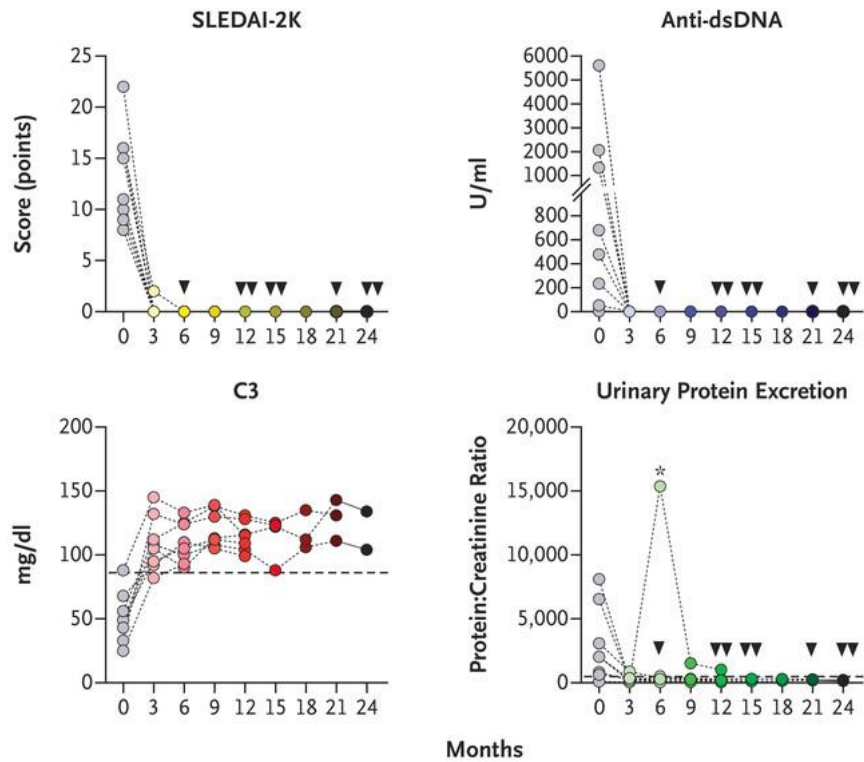
CD19 CAR T-Cell Therapy in Autoimmune Disease — A Case Series with Follow-up

Fabian Müller, M.D., Jule Taubmann, M.D., Laura Bucci, M.D., Artur Wilhelm, Ph.D., Christina Bergmann, M.D., Simon Völkl, Ph.D., Michael Aigner, Ph.D., Tobias Rothe, Ph.D., Ioanna Minopoulou, M.D., Carlo Tur, M.D., Johannes Knitza, M.D., Soraya Kharboutli, M.D., Sascha Kretschmann, Ph.D., Ingrid Vasova, M.D., Silvia Spoerl, M.D., Hannah Reimann, Ph.D., Luis Munoz, M.D., Roman G. Gerlach, Ph.D., Simon Schäfer, Ph.D., Ricardo Grieshaber-Bouyer, M.D., Anne-Sophie Korganow, M.D., Dominique Farge-Bancel, M.D., Dimitrios Mouggiakakos, M.D., Aline Bozec, Ph.D., Thomas Winkler, Ph.D., Gerhard Krönke, M.D., Andreas Mackensen, M.D., and Georg Schett, M.D.

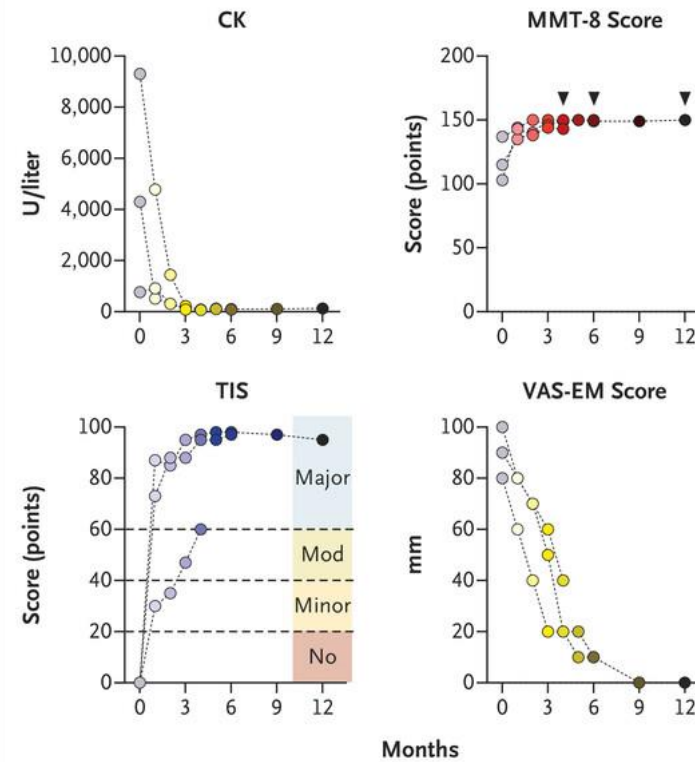
A Short-Term Efficacy of CD19 CAR T-Cell Therapy in Autoimmune Disease

Patient No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Disease	SLE								IIM			SSc			
DORIS Remission	+	+	+	+	+	+	+	+*							
LLDAS	+	+	+	+	+	+	+	+*		N/A					
SLEDAI-2K Score	0	0	0	0	0	0	0	0							
ACR-EULAR Major Clinical Response	N/A								+	+	+*				
Normalization of CK Level	N/A								+	+	+*				
Change in EUSTAR-AI Score	N/A											-2.3	-4.7	-4.3	-1.9*
Change in mRSS	N/A											-7	-9	-17	-5*
Glucocorticoid-free State	+	+	+	+	+	+	+	+*	+	+	+*	+	+	+	+*
No Immunosuppressive Drugs	+	+	+	+	+	+	+	+*	+	+	+*	+	+	+	+*

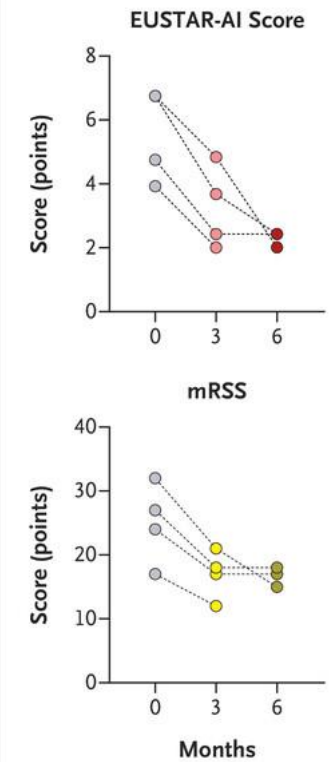
B Long-Term Outcomes in Patients with SLE (N=8)



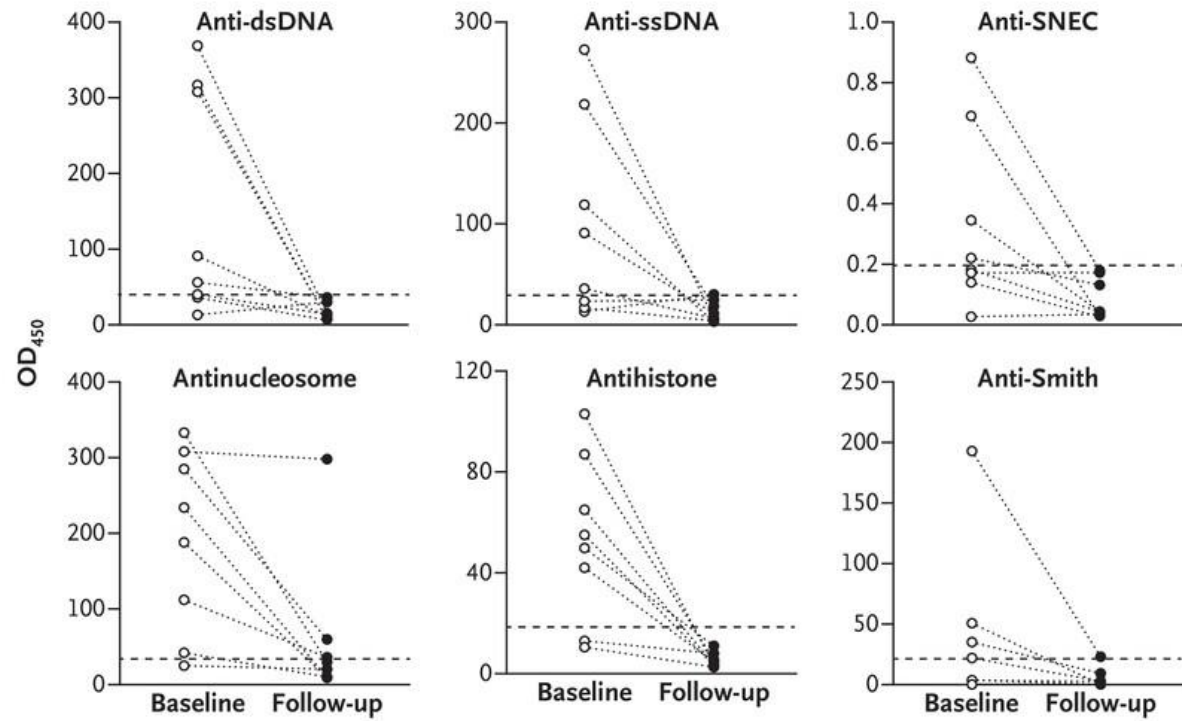
C Long-Term Outcomes in Patients with IIM (N=3)



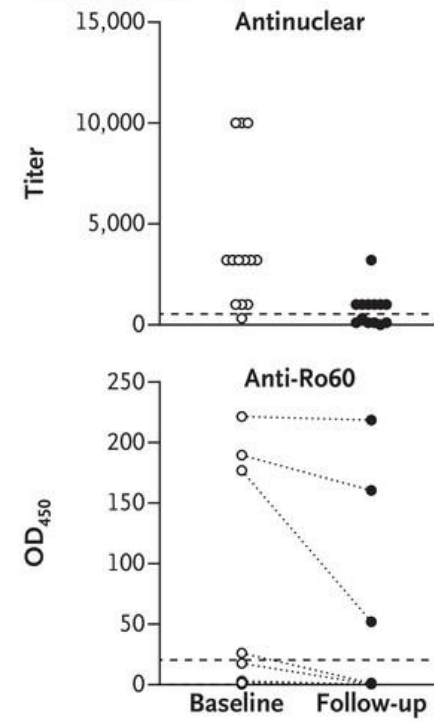
D Long-Term Outcomes in Patients with SSc (N=4)



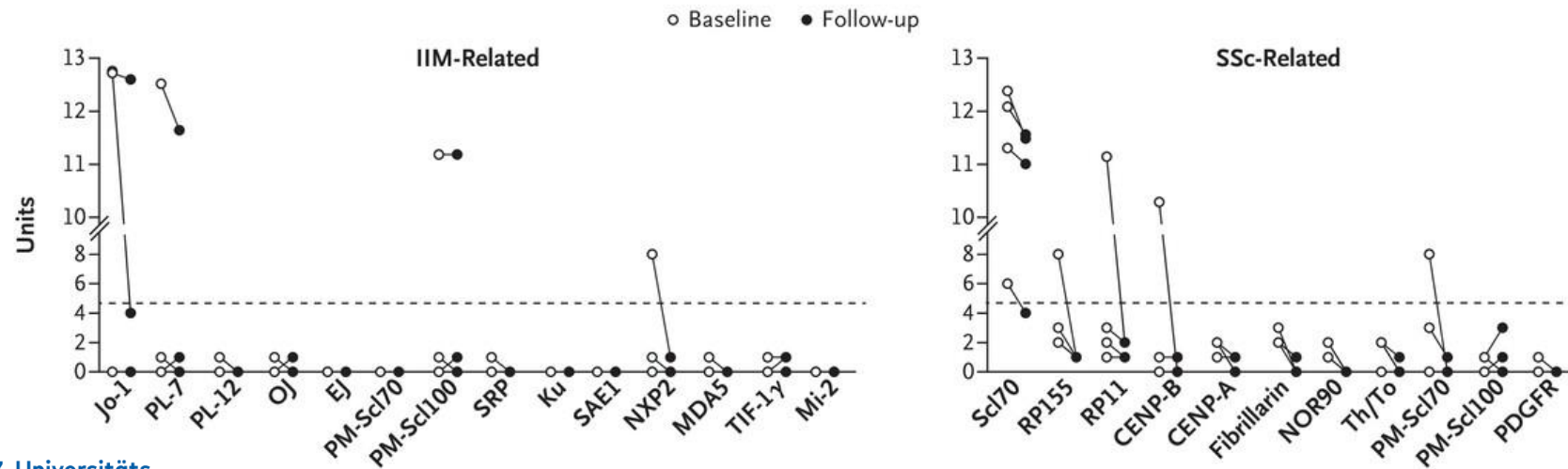
A Serum Autoantibody Levels in Patients with SLE (N=8)



B Antinuclear and Anti-Ro60 Antibodies (N=13)

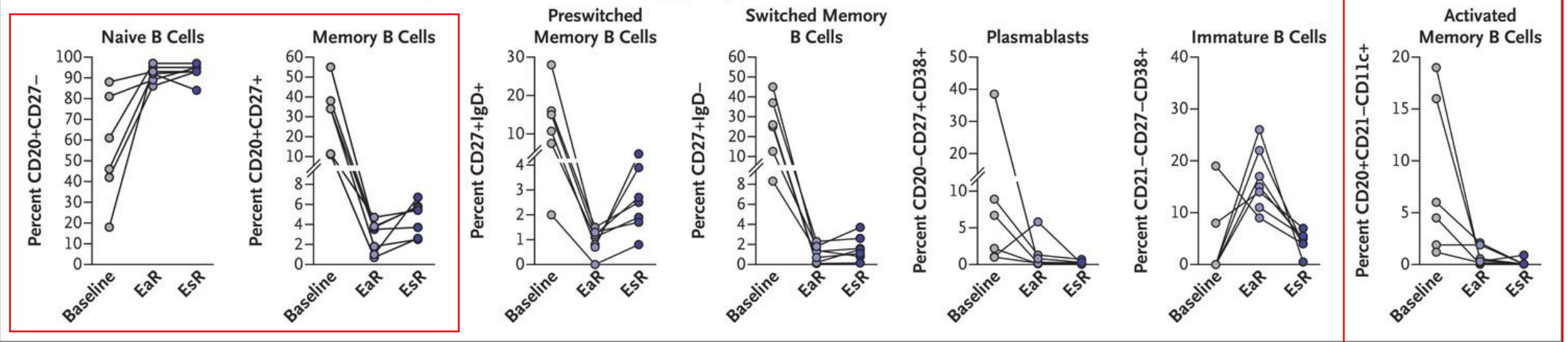


C IIM-Related Antibodies (N=3) and SSc-Related Antibodies (N=4)



CD19 CAR-T Zellen in rheumatoide Arthritis

A Patients with SLE with More than 1 Yr of Follow-up after CD19 CAR T-Cell Therapy (N=6)



Stehen wir am Beginn der Ära der Heilung von Rheuma?

BiTE-Therapie

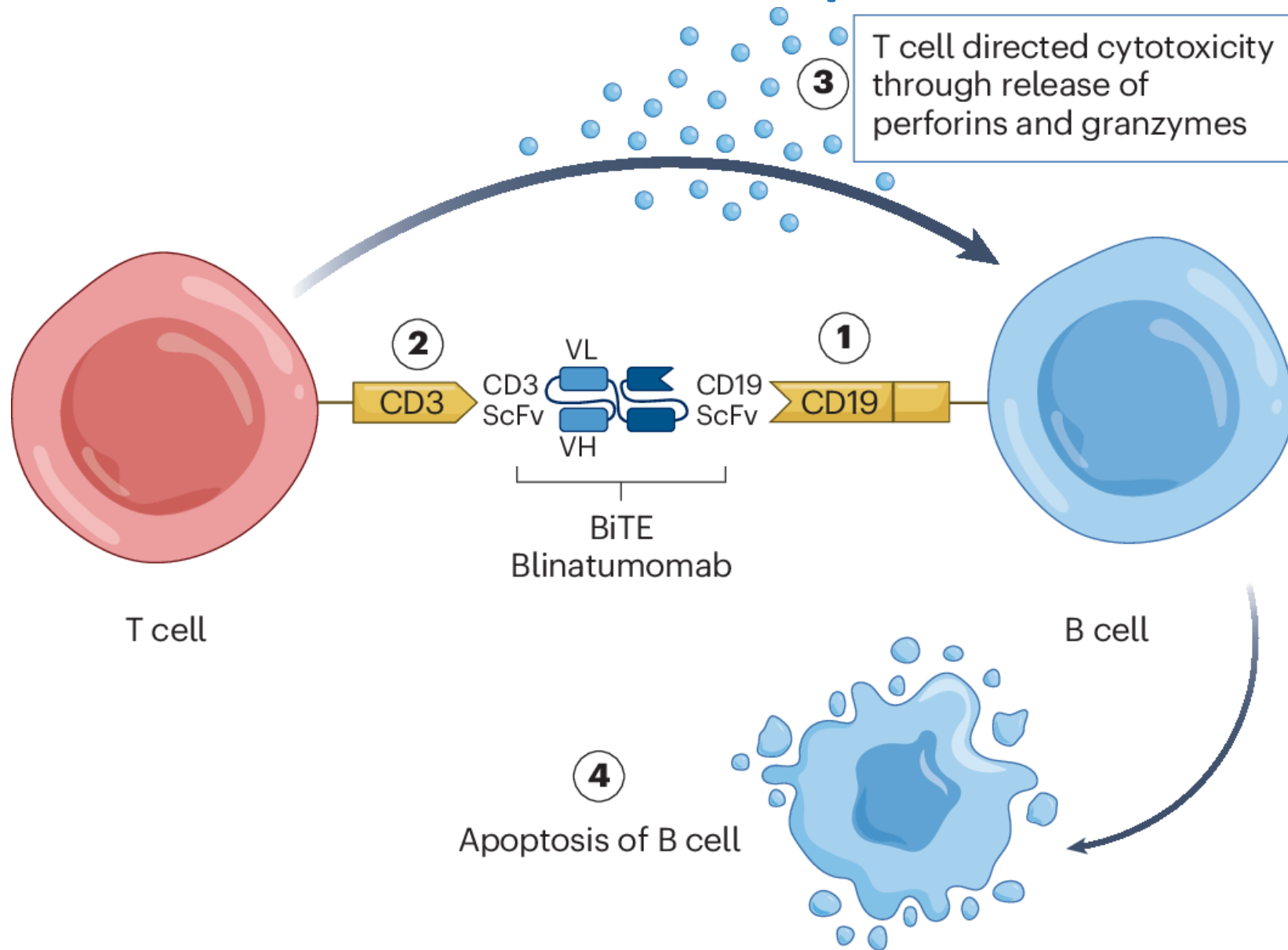


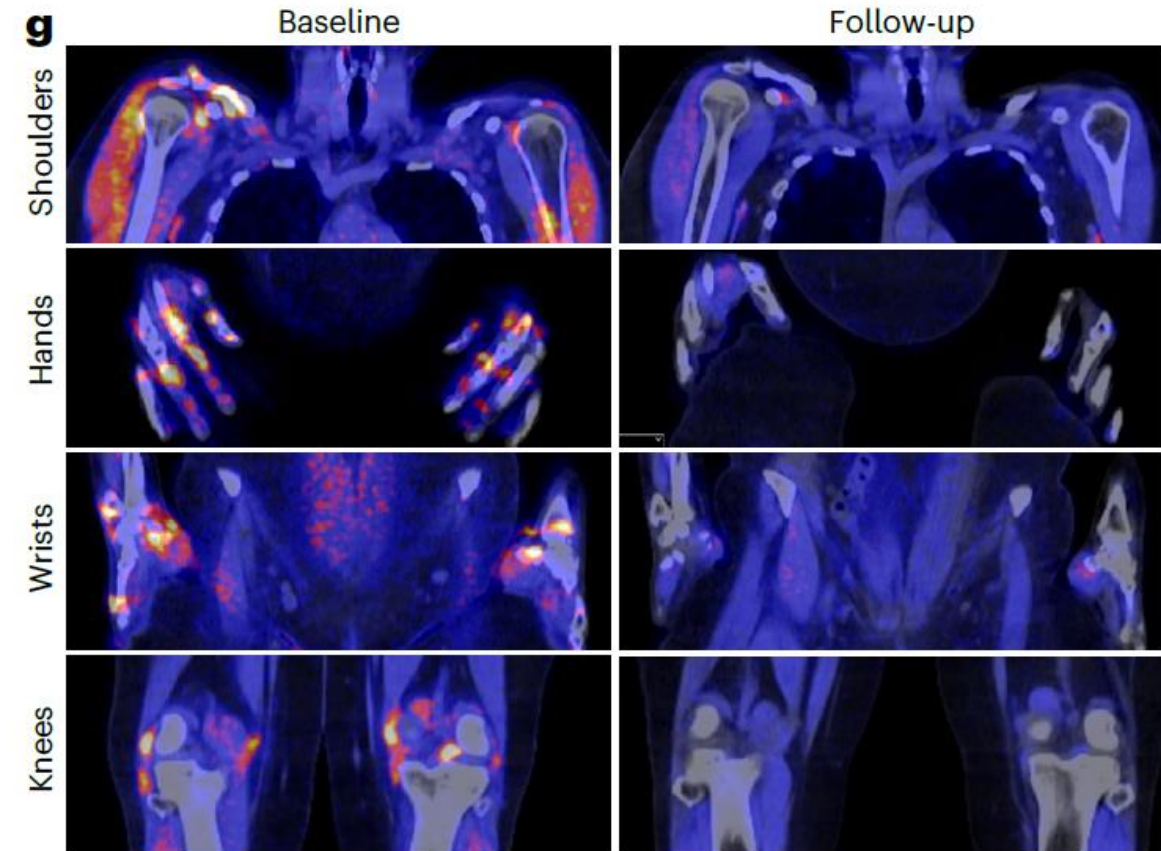
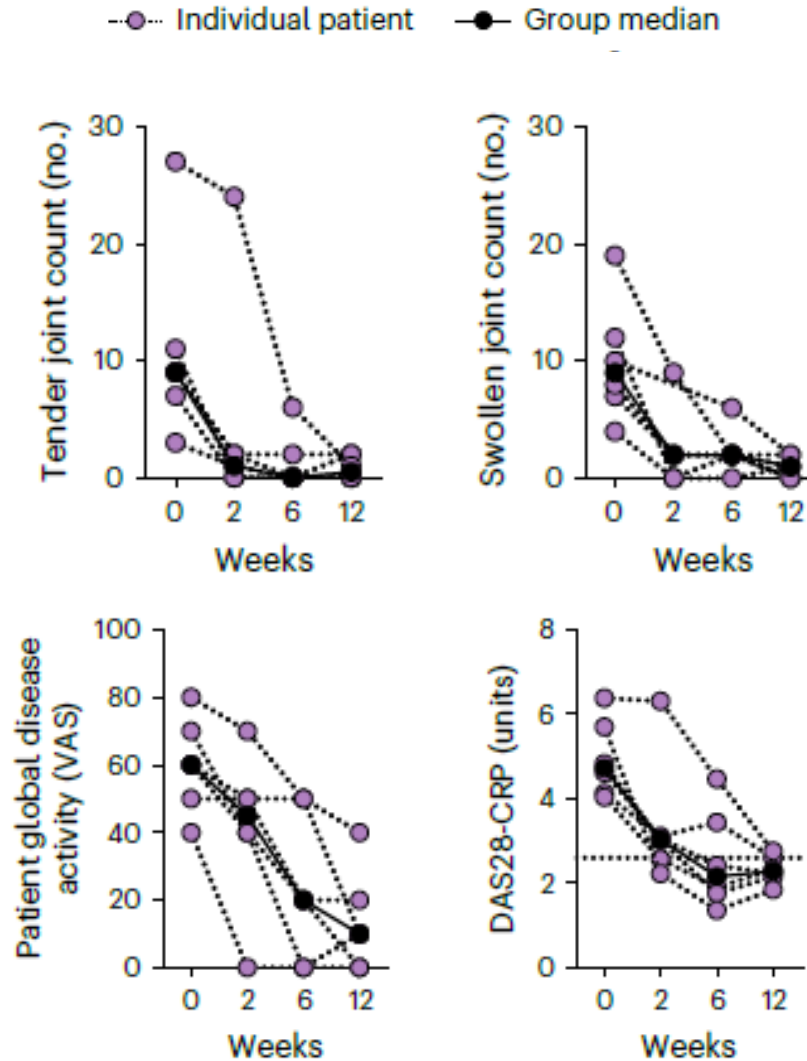
Table 1 | Baseline characteristics of refractory rheumatoid arthritis patients

Patient no.	1	2	3	4	5	6
Demographic characteristics						
Age (years)	55	48	51	31	60	55
Sex	M	F	F	F	M	M
Body mass index	28	33	23	25	35	21
Disease-specific characteristics						
Disease duration (years)	6	4	27	6	18	3
DAS28 (units)	5.70	5.54	5.52	4.62	4.05	4.13
ACPA (U l ⁻¹)	0.8	155	2	301	163	64
RF (U l ⁻¹)	<5	417	165	18	222	64
CRP (mg l ⁻¹)	3.6	13.2	23.7	4.5	3.2	0.5

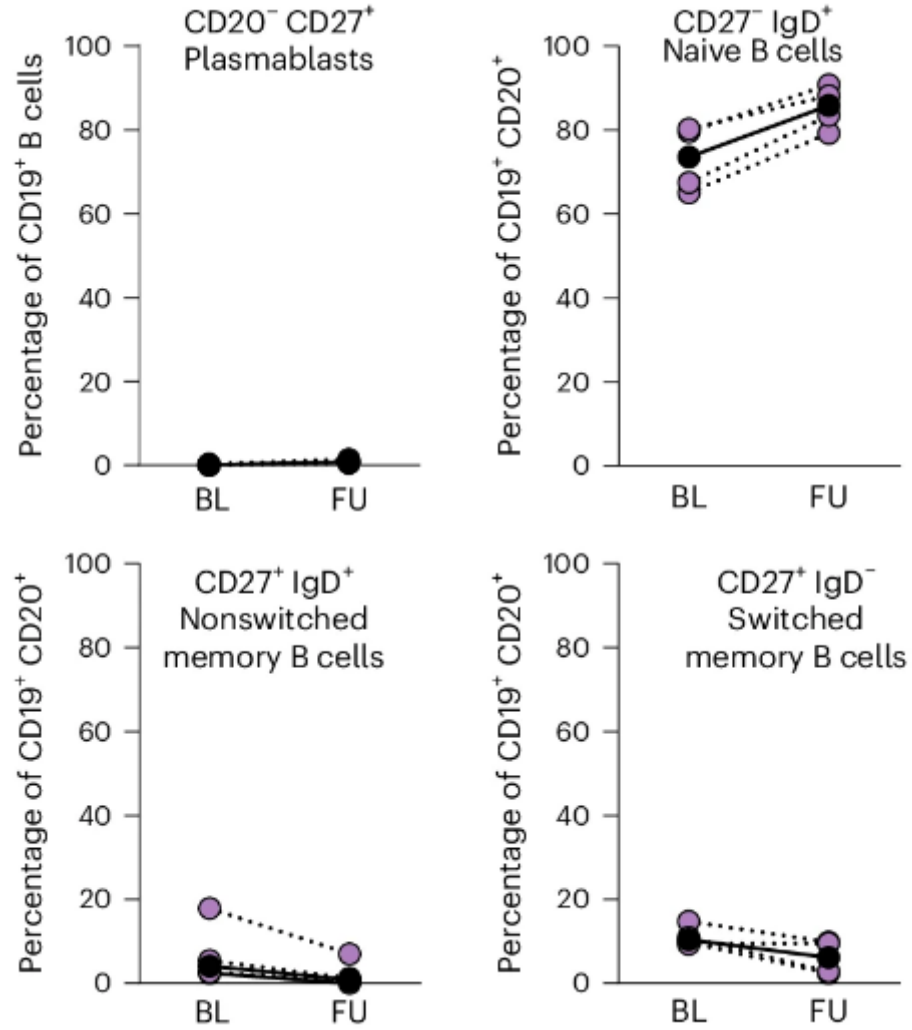
Previous antirheumatic treatments						
Methotrexate	+	+	+	+	+	+
Leflunomide	+	+	+	+	+	+
TNF inhibitor	+	+	+	+	+	+
IL-6 inhibitor	+	-	+	+	+	+
Upadacitinib	+	+	+	+	+	+
Baricitinib	+	-	+	+	+	+
Filgotinib	+	-	-	+	-	+
Tofacitinib	-	-	+	-	-	-
Abatacept	+	+	+	-	-	-
Rituximab	+	-	+	-	+	-

Stehen wir am Beginn der Ära der Heilung von Rheuma?

5/6 Erhaltungstherapie mit Abatacept, 1 unter nur Methotrexat



BiTE-Therapie



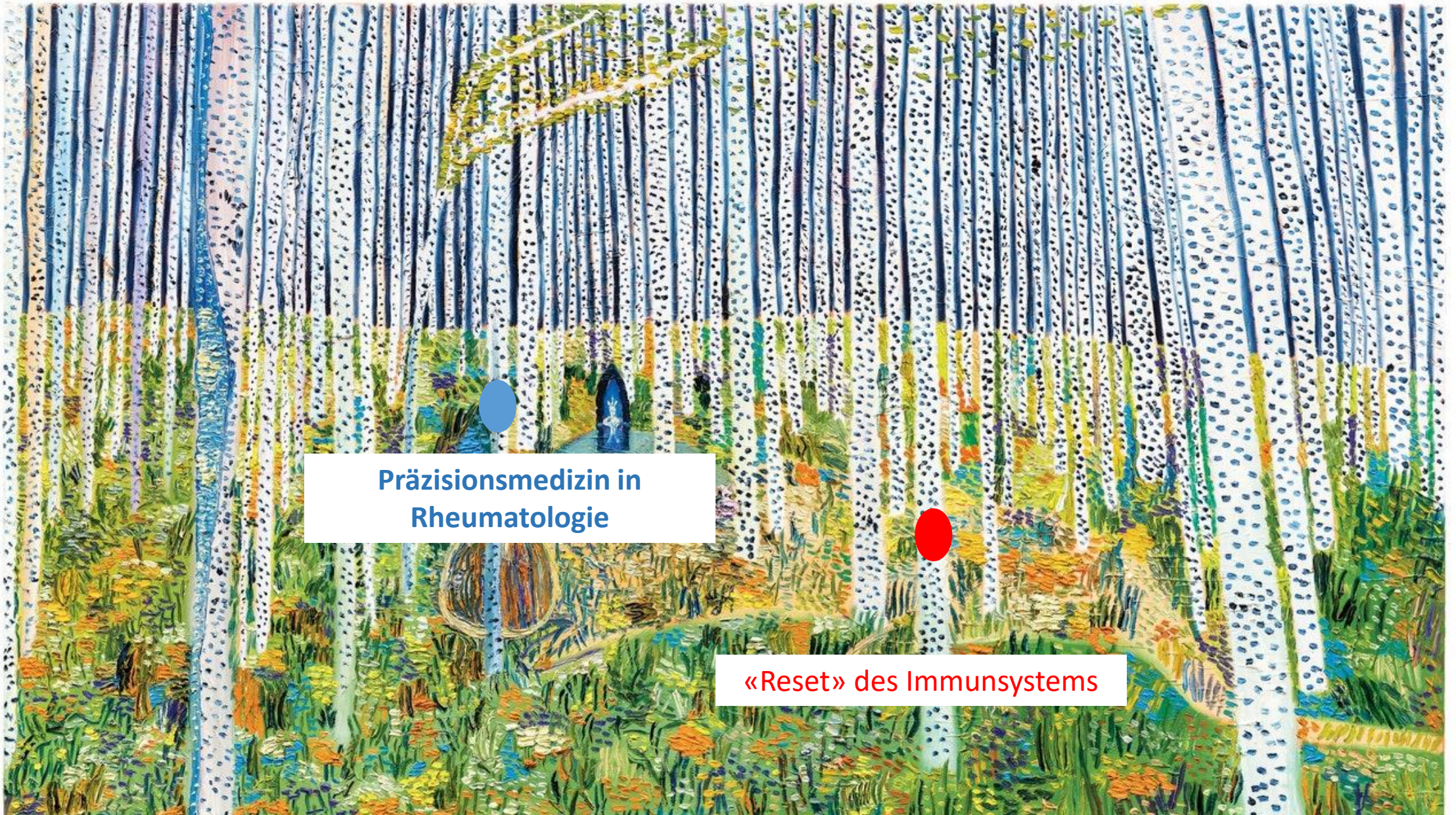
BiTE-Therapie

Patient no.	1	2	3	4	5	6
Inflammation						
Subfebrile state	Week 1 of 3	Week 1 of 3	0	0	Week 1	Week 1
Chills	Week 1 of 3	0	0	0	0	0
Fever	0	0	0	0	0	0
Elevated CRP	Week 1	Week 1	0	Week 1	0	Week 1
Worsening of RA	0	0	0	0	0	0
Neurotoxicity						
Headache, malaise, confusion	0	0	0	0	0	0
Infections						
Urinary tract Infection	0	0	0	Week 1	0	0
Herpes simplex	0	Week 3	0	0	0	0
SARS-CoV-2	0	Week 12	0	0	0	0
Opportunistic	0	0	0	0	0	0
Myelotoxicity						
Neutropenia	0	0	0	0	0	0
Thrombocytopenia	0	0	0	0	0	0
Liver enzymes	0	0	0	0	0	0
Hypogammaglobulinemia	0	0	0	0	0	Week 3
Others						
Nausea	Week 3 of 5	0	0	0	0	0
Tachycardia	Week 2	0	0	Week 9	0	0
Headache	0	0	0	Week 1	0	0

Kann man Rheuma heilen ?



- Noch nicht
- Ansprechen unterschiedlich je nach Krankheit, je nach pathologischen Befunden
 - Fibrose vs. Entzündung
 - Sehr positiven Daten für Lupus, gemischte für SSc
- Target des CAR T Zellen besser zu identifizieren je nach Krankheit
- Zeitpunkt der Therapie zu präzisieren
- Notwendigkeit, die Langzeitsicherheit zu evaluieren



Präzisionsmedizin in
Rheumatologie

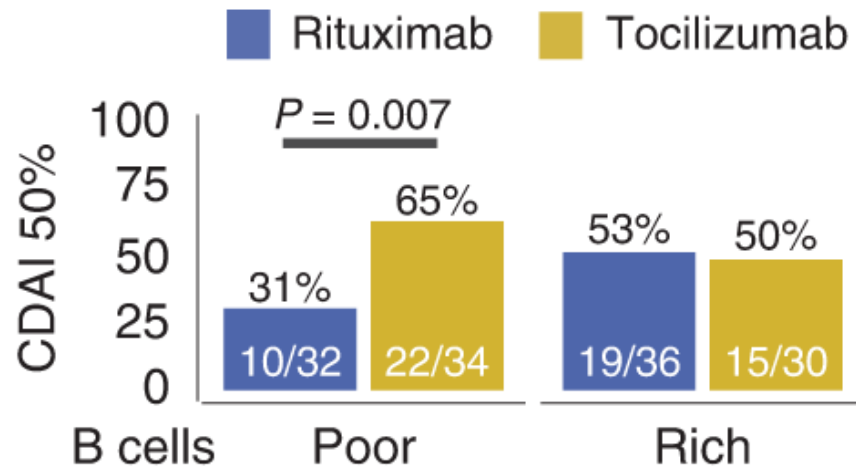
«Reset» des Immunsystems

Präzisionsmedizin in rheumatoiden Arthritis

Widersprüchliche Daten über das Synovium

Patienten mit Versagen einer Anti-TNF-Therapie

Behandlungsnaive Patienten



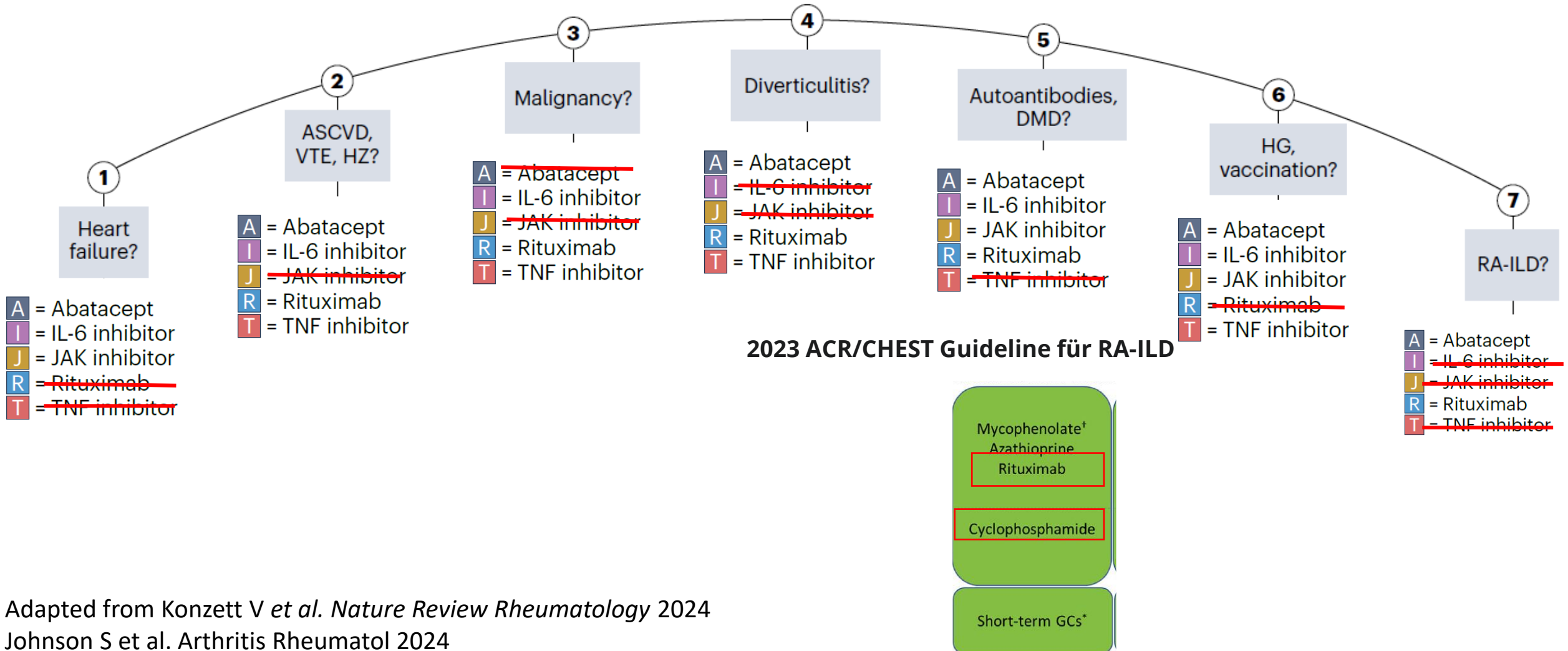
In the B cell-poor population, ACR20 response at 16 weeks (primary endpoint) showed **no significant differences** between etanercept and tocilizumab grouped together and rituximab

Rivellese F *et al.* *Nature Medicine* 2022

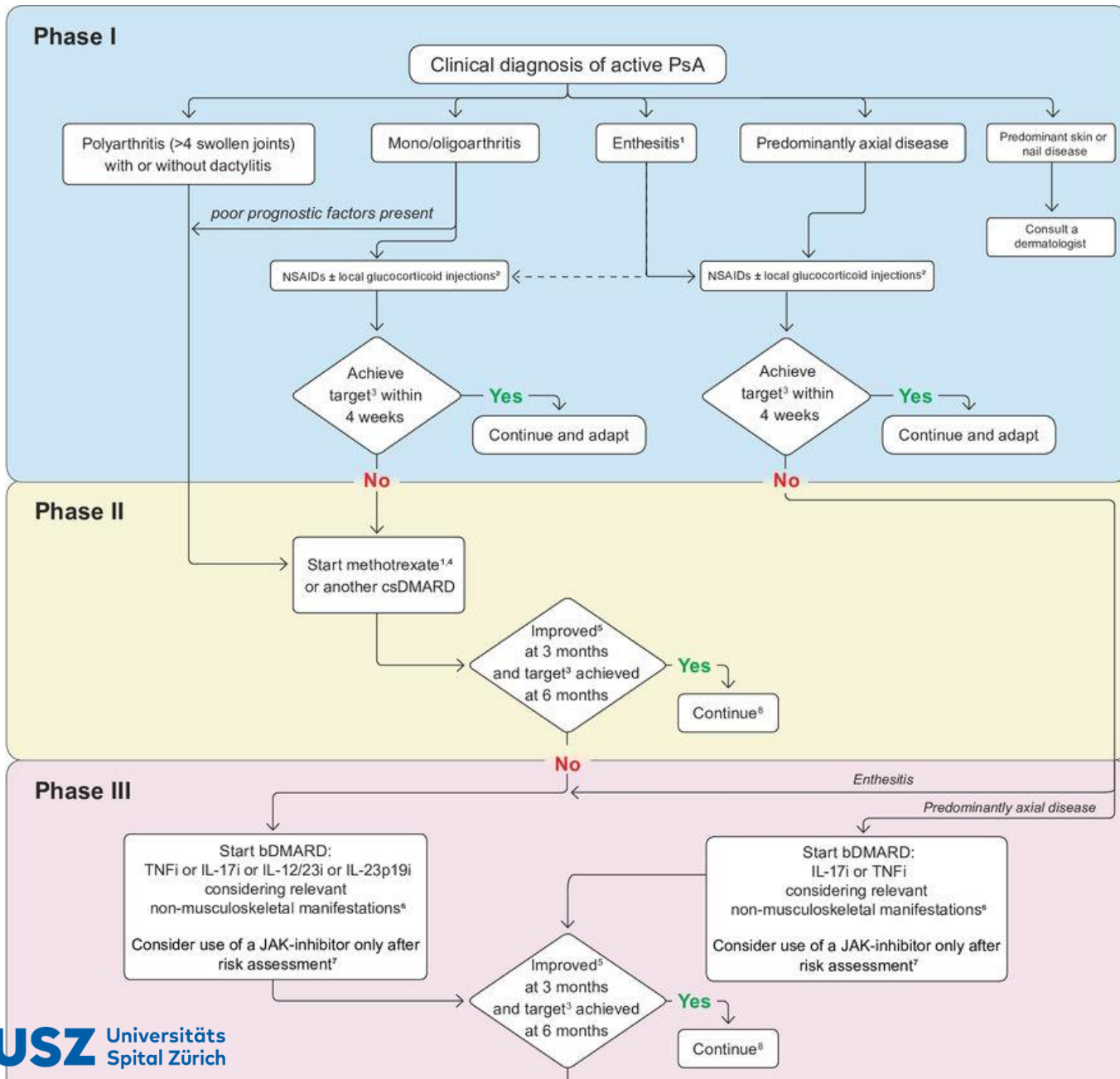
Rivellese F *et al.* *The Lancet Rheumatology* 2023

Präzisionsmedizin in rheumatoiden Arthritis

Atherosclerotic cardiovascular disease (ASCVD), venous thromboembolism (VTE), herpes zoster (HZ)

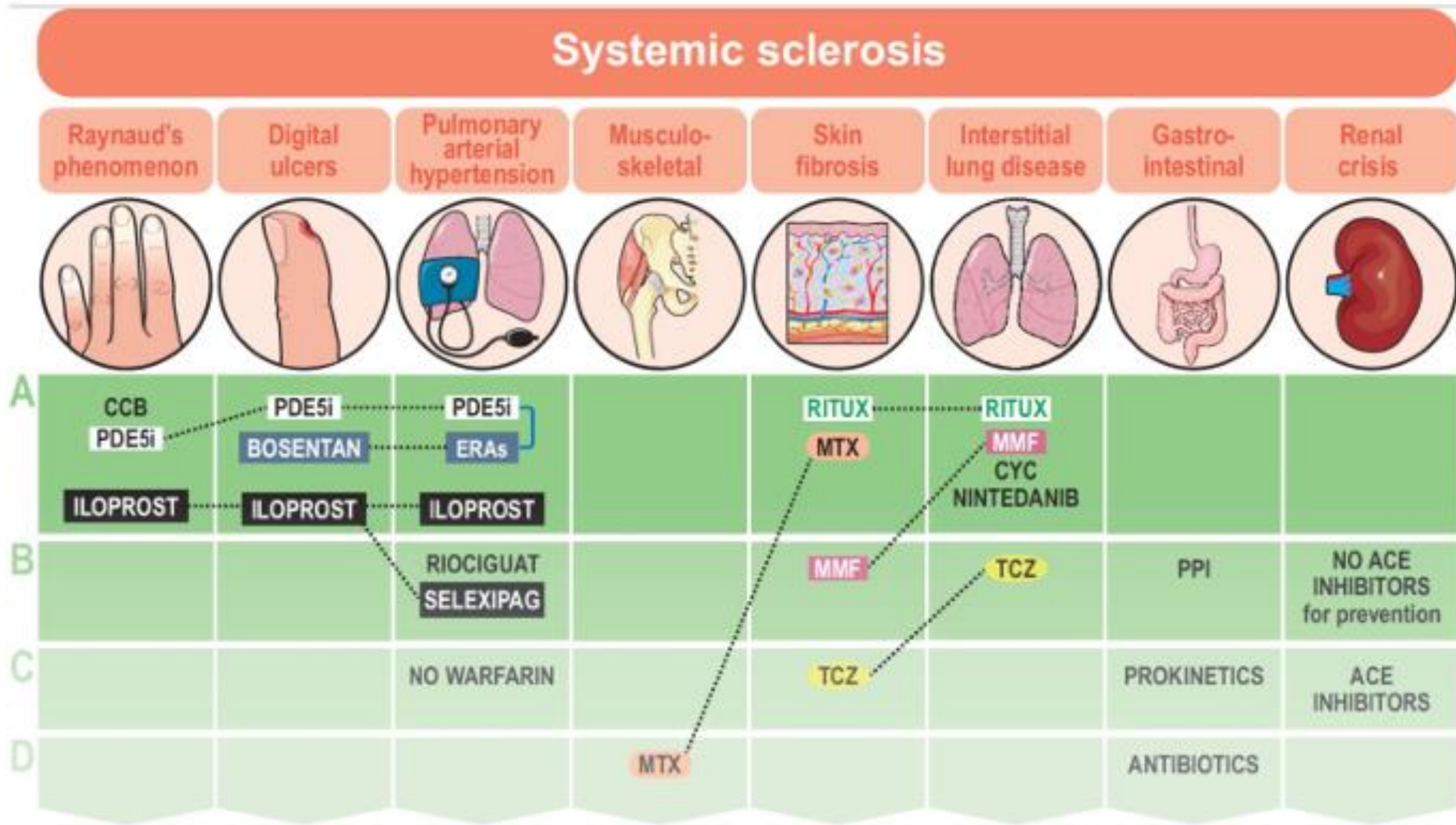


Präzisionsmedizin in Psoriasis-Arthritis

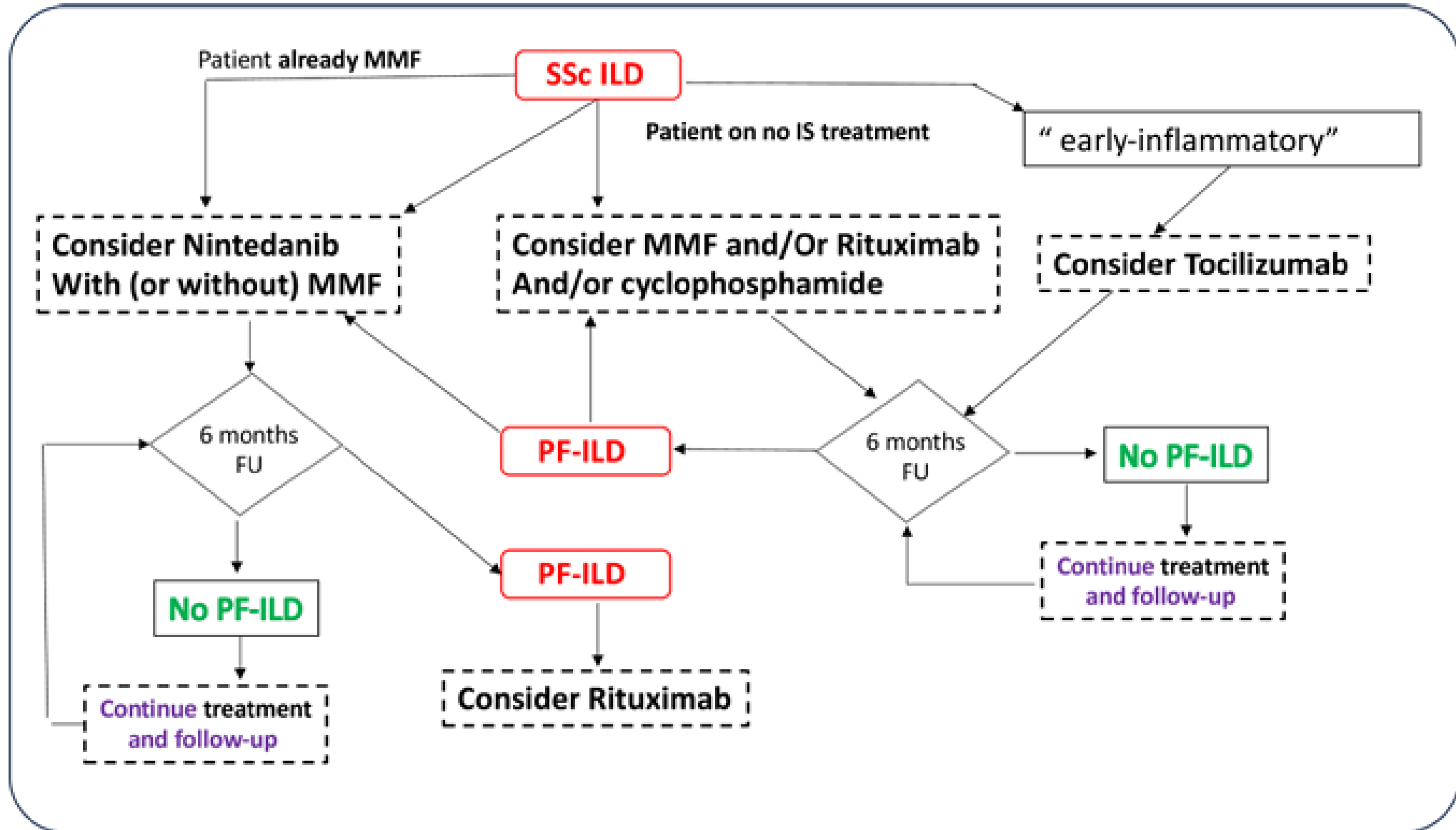


The choice of the mode of action should reflect non-musculoskeletal manifestations related to PsA; with clinically relevant **skin involvement**, preference should be given to an **IL-17A or IL-17A/F or IL-23 or IL-12/23 inhibitor**; with **uveitis** to an **anti-TNF monoclonal antibody**; and with **IBD** to an **anti-TNF monoclonal antibody or an IL-23 inhibitor or IL-12/23 inhibitor or a JAKi**.

Präzisionsmedizin in systemischer Sklerose



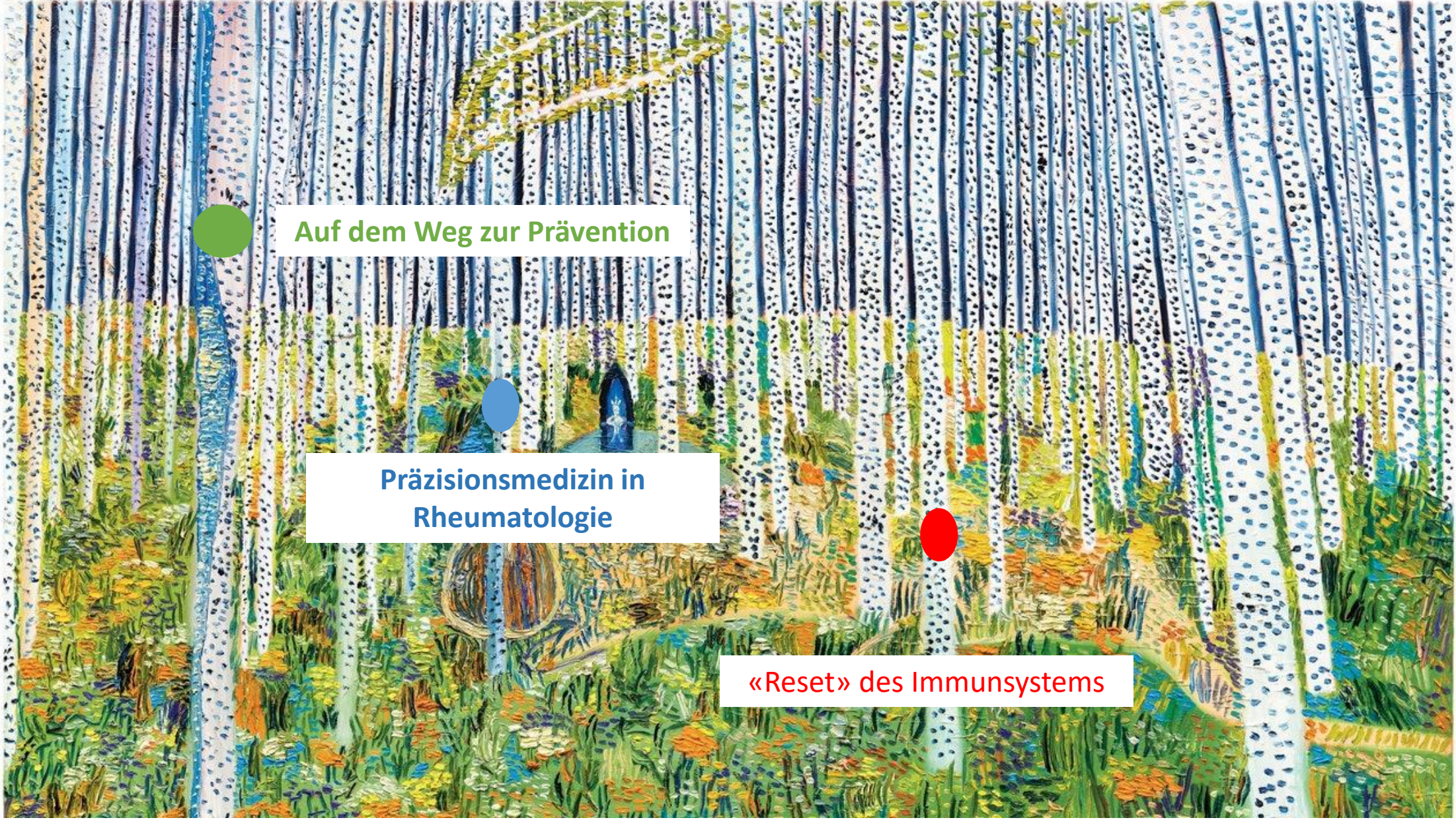
Präzisionsmedizin in systemischer Sklerose



Kann man die Patienten für eine personalisierte Therapie stratifizieren ?



- Die Gewebe- und Blutdaten ermöglichen es noch nicht
- Behandlung je nach klinischem Befall, Komorbiditäten und einigen Merkmalen entsprechend den Einschlusskriterien der klinischen Studien



Auf dem Weg zur Prävention

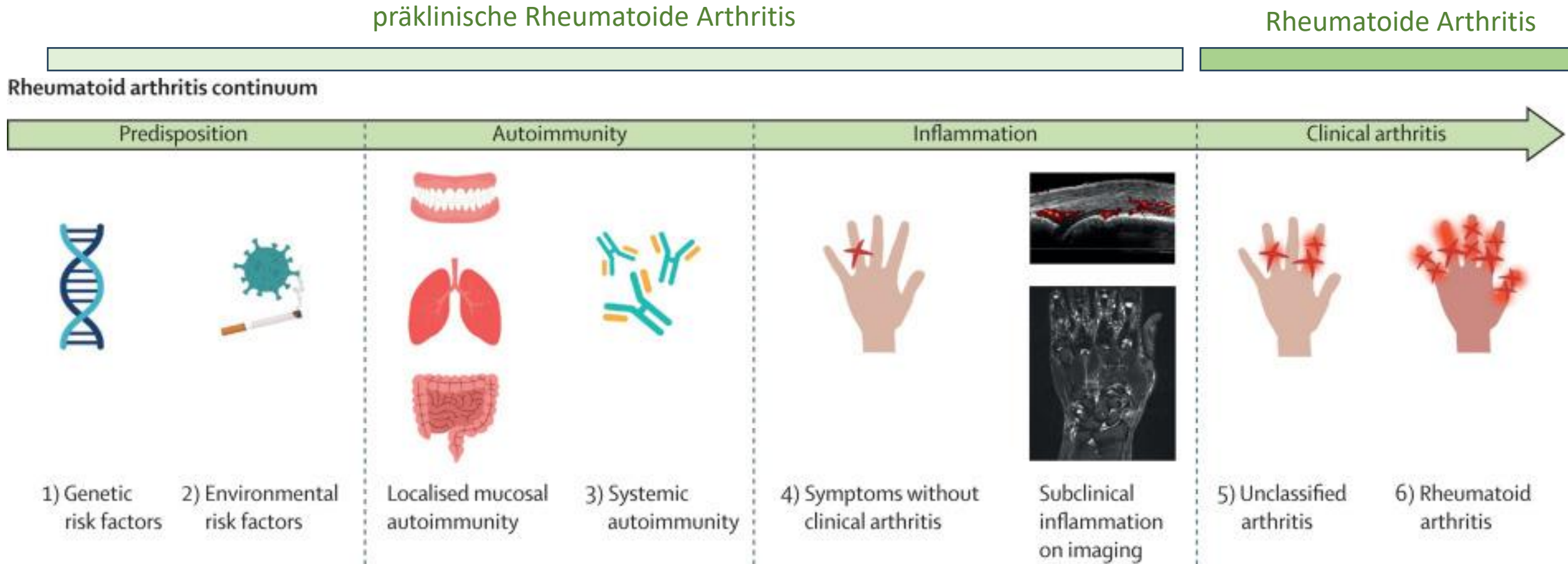


Präzisionsmedizin in
Rheumatologie



«Reset» des Immunsystems

Kann man RA vorbeugen?



Kann man RA vorbeugen?

Studie	Einschlusskriterien	Study design und Intervention	Outcome	Ergebnisse
Bos et al. 2010	RF- und/oder ACPA-positive Shared-Epitope-positiv; Arthralgie	RCT; Dexamethason 100 mg i.m. x 2 Dosen vs. Placebo	Neu aufgetretene klinische IA	Kein Unterschied (26Mt)
Gerlag et al. 2019 (PRAIRI)	RF- und ACPA-positive; CRP>0.6 mg/L; Arthralgie	RCT; Rituximab 1000 mg i.m. x 1 vs. Placebo	Neu aufgetretene klinische IA	Kein Unterschied (29Mt), verzögertem Auftreten der IA in der RTX-Gruppe
van Boheemen et al. 2021 (StapRA)	RF- und ACPA-positive; ACPA>3N; Arthralgie	RCT; Atorvastatin x 3 Jahre vs. Placebo	Neu aufgetretene klinische IA	Kein Unterschied (14Mt)
Krijbolder et al. 2022 (TREAT EARLIER)	Arthralgie MRI. Gelenkentzündung	RCT; Methylprednisolon 120 mg x 1 und Methotrexat x 1 Jahr vs. Placebo; 1 Jahr Nachbeobachtung	Rheumatoide Arthritis	Kein Unterschied (2 Jahre) Erhöhtes Risiko bei ACPA+, jedoch kein Unterschied zwischen Gruppen nach 2 Jahren
Hahn et al. 2022 (VITAL)	Kein Krebs, keine kardiovaskuläre Vorerkrankung	RCT; Omega-3-Fettsäuren (1000 mg/Tag) und/oder Vitamin D (2000 IE/Tag) vs. Placebo x 5 Jahre	Inzidente Autoimmunerkrankung (inkl RA) durch Aktenauswertung	↓ Autoimmunerkrankung (inkl RA) bei 22% mit Vitamin D
Deane et al. 2022 (stopRA)	ACPA>2N	RCT; Hydroxychloroquin x 1 Jahr versus Placebo; 2 Jahre Nachbeobachtung	Rheumatoide Arthritis	Kein Unterschied



Abatacept in individuals at high risk of rheumatoid arthritis (APIPPRA): a randomised, double-blind, multicentre, parallel, placebo-controlled, phase 2b clinical trial



Andrew P Cope, Marianna Jasencova, Joana C Vasconcelos, Andrew Filer, Karim Raza, Sumera Qureshi, Maria Antonietta D'Agostino, Iain B McInnes, John D Isaacs, Arthur G Pratt, Benjamin A Fisher, Christopher D Buckley, Paul Emery, Pauline Ho, Maya H Buch, Coziana Ciurtin, Dirkjan van Schaardenburg, Thomas Huizinga, René Toes, Evangelos Georgiou, Joanna Kelly, Caroline Murphy, A Toby Prevost, on behalf of the APIPPRA study investigators*



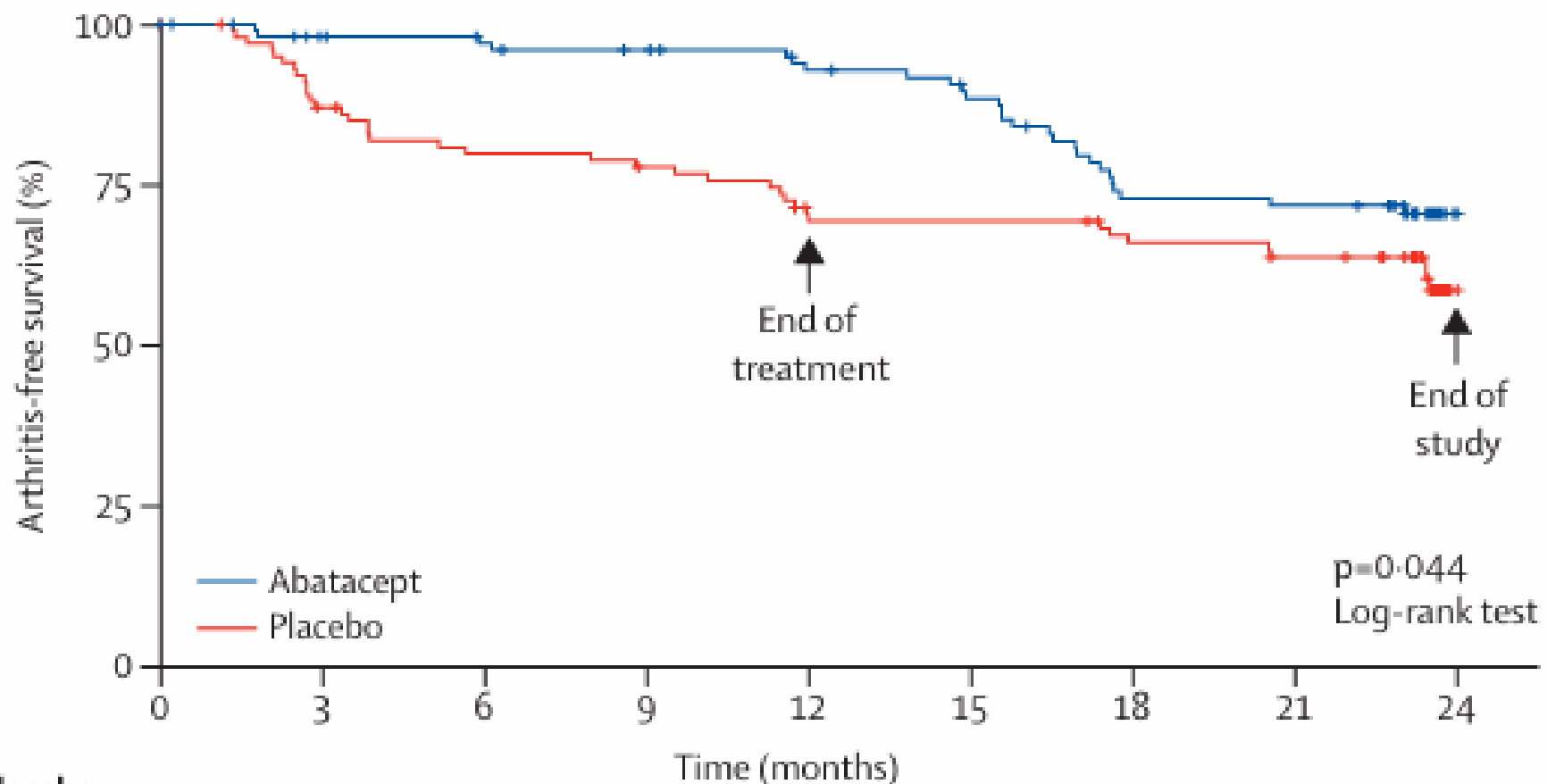
ACPA+RF positiv oder ACPA ≥ 3 N
entzündliche Arthralgie



RCT
Abatacept 125 mg/w \times 1 Jahr vs.
Placebo; 1 Jahr Nachbeobachtung



RA



	0	3	6	9	12	15	18	21	24
Placebo									
Number at risk	103	83	77	74	64	64	59	57	32
Cumulative events		14	20	22	30	30	33	35	38
Cumulative censored observations		6	6	7	9	9	11	11	33
Abatacept									
Number at risk	110	97	93	90	86	80	65	64	57
Cumulative events		2	4	4	7	11	25	26	27
Cumulative censored observations		11	13	16	17	19	20	20	26



Abatacept inhibits inflammation and onset of rheumatoid arthritis in individuals at high risk (ARIAA): a randomised, international, multicentre, double-blind, placebo-controlled trial

Juergen Rech*, Koray Tascilar*, Melanie Hagen, Arnd Kleyer, Bernhard Manger, Verena Schoenau, Axel J Hueber, Stefan Kleinert, Xenofon Baraliakos, Jürgen Braun, Uta Kiltz, Martin Fleck, Andrea Rubbert-Roth, David M Kofler, Frank Behrens, Martin Feuchtenberger, Michael Zaenker, Reinhard Voll, Nils Venhoff, Jens Thiel, Cornelia Glaser, Eugen Feist, Gerd R Burmester, Kirsten Karberg, Johannes Strunk, Juan D Cañete, Ladislav Senolt, Maria Filkova, Esperanza Naredo, Raquel Largo, Gerhard Krönke, Maria-Antonietta D'Agostino, Mikkel Østergaard, Georg Schett



ACPA und Arthralgie und Gelenkentzündung (MR)



RCT
Abatacept 125 mg/w × 6 Mt vs.
Placebo; 1 Jahr Nachbeobachtung



Verbesserung im Gelenkentzündung
(MR)
RA

Kann man RA vorbeugen?

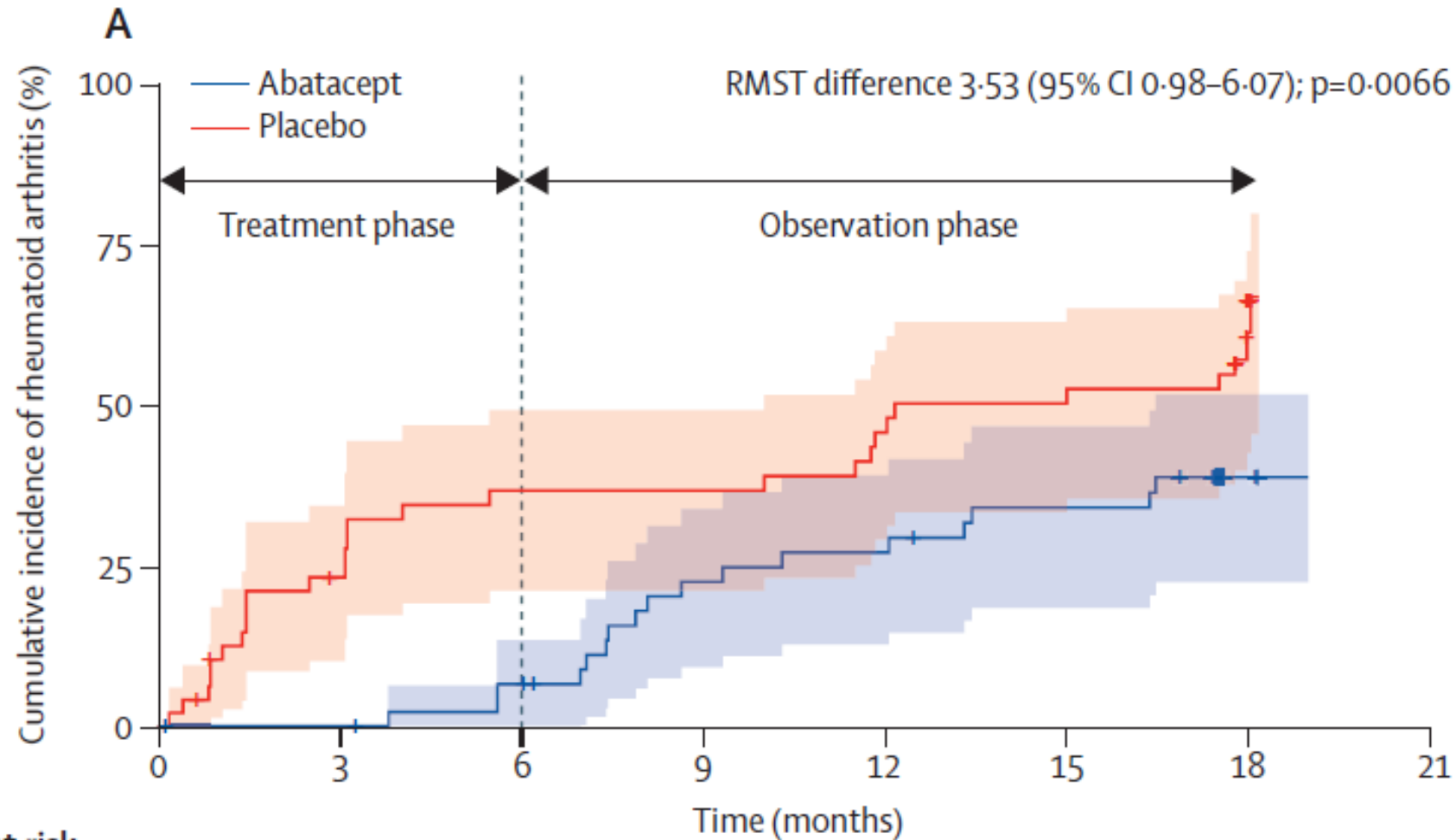
Suppl. Table-1 MRI outcomes at the end of treatment phase and end of observation phase.

		Baseline Mean (SD)	End of treatment (6 months)				End of observation (18 months)			
			Mean (SD)	Mean difference (95% CI)	Adjusted mean- difference (95% CI)	p-value	Mean (SD)	Mean difference (95% CI)	Adjusted mean- difference (95% CI)	p-value
Synovitis score	Abatacept	7.84 (4.93)	7.03 (4.67)	0.77	-0.17	0.81	7.03 (4.38)	0.86	-0.62	0.48
	Placebo	5.75 (3.71)	6.26 (4.45)	(-1.29 to 2.83)	(-1.60 to 1.25)		6.17 (3.68)	(-1.30 to 3.03)	(-2.34 to 1.10)	
Tenosynovitis score	Abatacept	5.54 (3.87)	3.49 (2.51)	-0.61	-1.22	0.085	3.22 (2.21)	0.13	-1.82	0.016
	Placebo	4.19 (3.55)	4.10 (4.49)	(-2.23 to 1.01)	(-2.61 to 0.17)		3.09 (3.05)	(-1.41 to 1.67)	(-3.29 to -0.35)	
Osteitis score	Abatacept	1.91 (2.67)	2.07 (2.70)	-0.10	-0.73	0.14	2.09 (2.35)	0.76	0.09	0.87
	Placebo	1.29 (2.18)	2.17 (4.74)	(-1.82 to 1.62)	(-1.69 to 0.23)		1.33 (1.69)	(-0.31 to 1.83)	(-0.96 to 1.13)	
Total inflammation score	Abatacept	15.3 (8.88)	12.6 (8.08)	0.21	-2.21	0.18	11.6 (7.22)	1.20	-2.70	0.13
	Placebo	10.9 (6.10)	12.4 (9.92)	(-3.94 to 4.35)	(-5.45 to 1.03)		10.4 (5.70)	(-2.43 to 4.84)	(-6.25 to 0.85)	
Erosion score	Abatacept	1.77 (2.27)	1.55 (2.12)	-0.06	0.08	0.43	1.69 (2.26)	0.34	0.07	0.54
	Placebo	1.48 (1.50)	1.61 (1.53)	(-0.88 to 0.76)	(-0.12 to 0.27)		1.35 (1.47)	(-0.67 to 1.35)	(-0.16 to 0.30)	

Verbesserung des MRs Befunde

- 6 Mt: 28 (57 %) Abatacept-Gruppe vs 15 (31 %) Placebo-Gruppe :absolute Differenz 26,5 %, [5,9-45,6]; p=0,014)
- 18 Mt: 25 (51%) vs 12 (24%): p=0,012

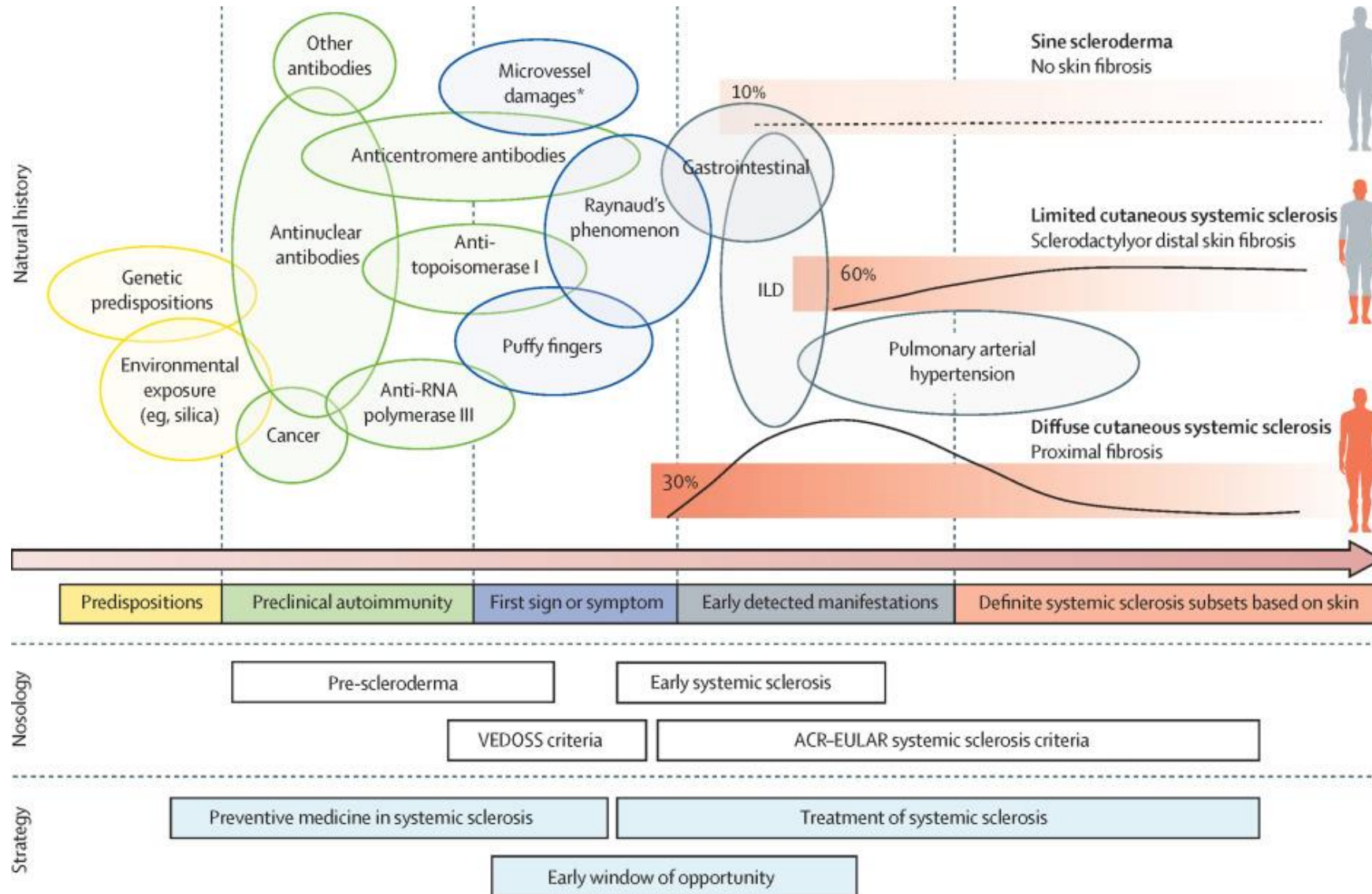
Kann man RA vorbeugen?



Number at risk
(number censored)

Abatacept	49 (2)	47 (2)	42 (4)	34 (5)	32 (5)	28 (6)	6 (26)	..
Placebo	49 (0)	32 (4)	28 (4)	28 (4)	24 (4)	22 (4)	7 (15)	..

Kann man SSc vorbeugen?



Efficacy of methylprednisolone in very early systemic sclerosis: results of the 'Hit Hard and Early' randomized controlled trial

Brigit E. Kersten ^{1,*}, Jacqueline M. J. Lemmers ¹, Amber Vanhaecke ²,
Arthiha Velauthapillai ¹, Wieneke M. T. van den Hombergh ¹, Frank H. J. van den Hoogen¹,
Cornelia H. M. van den Ende¹, Vanessa Smith ^{2,‡}, Madelon C. Vonk^{1,‡}



Puffy Finger < 3 J
SSc spezifische AK
Organische Mikroangiopathie
(early oder aktiv Pattern)



RCT
Methylprednisolone 1000 mg iv 3
Tage/Mt x 3 Mt oder Placebo



Anzahl von Kapillaren in der
Kapillaroskopie

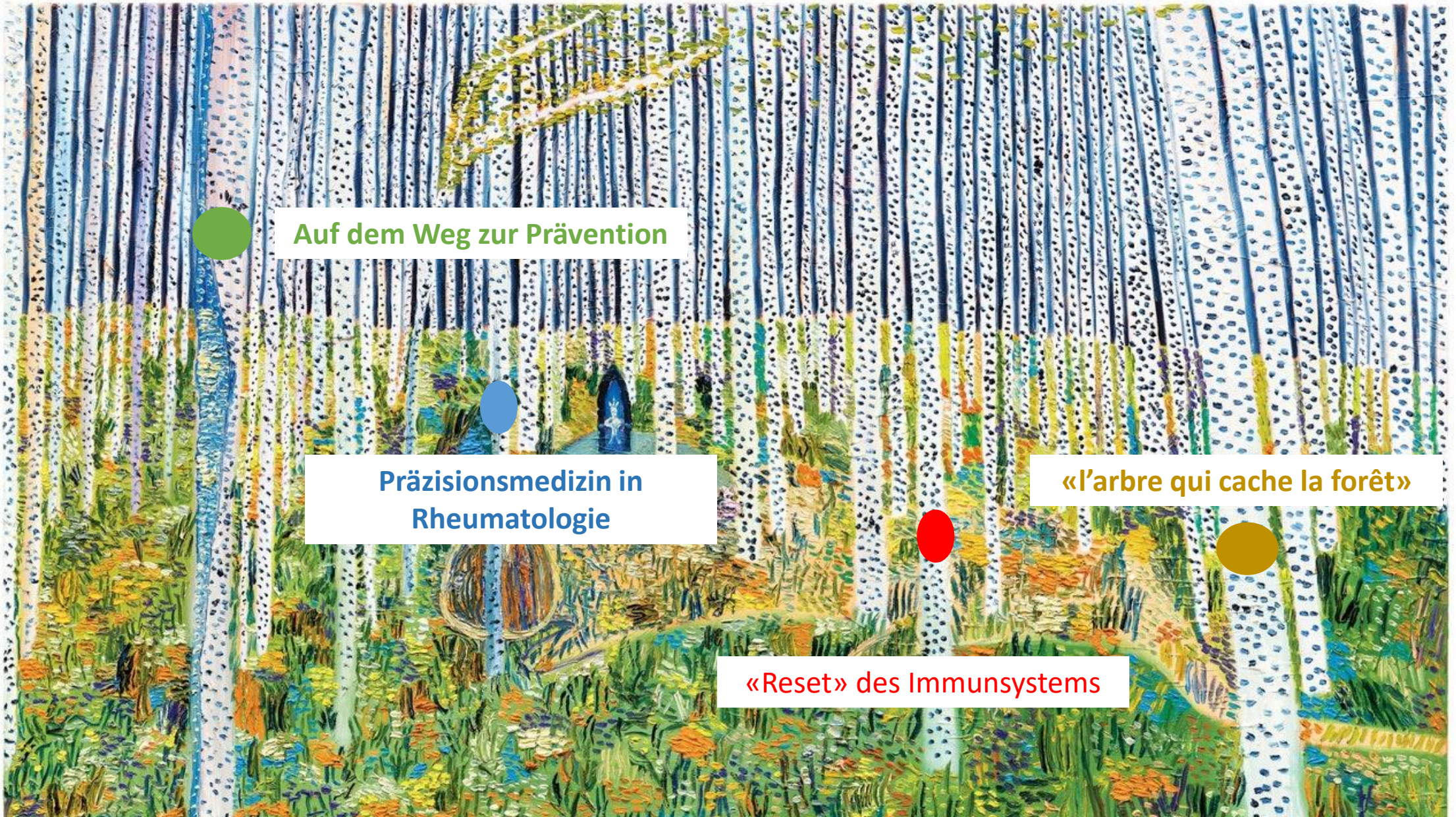
Kann man SSc vorbeugen?

	Placebo (<i>n</i> = 9)		Methylprednisolone (<i>n</i> = 21)		Difference between groups, mean (95 % CI) ^a
	Baseline	Week 12	Baseline	Week 12	
Primary end point					
Capillary density, mm	7.0 (1.1)	7.3 (1.6)	7.3 (1.6)	7.2 (1.7)	-0.45 (-1.11, 0.21)
Secondary endpoints					
No. megacapillaries/mm	0.8 (0.7)	0.9 (0.8)	0.7(0.8)	0.6 (0.6)	-0.72 (-0.46, 0.11)
EULAR/ACR criteria, ^b n	10.7 (1.0)	11.2 (1.7)	10.1(1.2)	11.2 (2.9)	1.00 (-1.03, 3.03)

Kann man Rheuma vorbeugen?



- Noch nicht
- Notwendigkeit
 - besserer Stratifizierung der Patienten
 - Zeitpunkt für den Beginn und Dauer der Behandlung zu definieren



Auf dem Weg zur Prävention

Präzisionsmedizin in
Rheumatologie

«l'arbre qui cache la forêt»

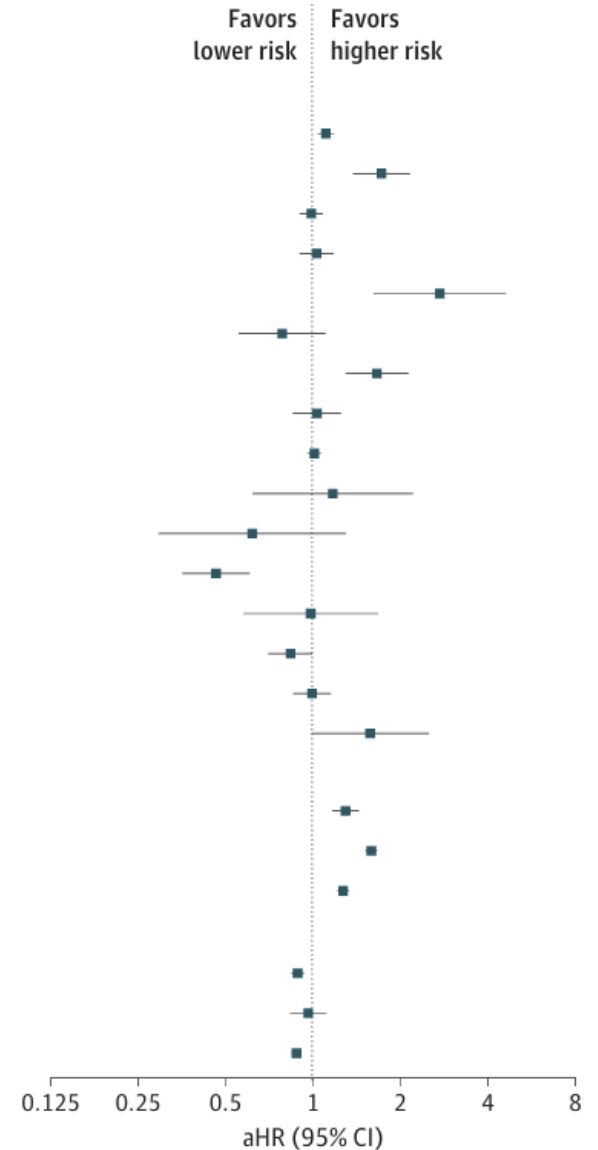
«Reset» des Immunsystems

Autoimmune and Autoinflammatory Disease Outcomes in the COVID-19 Cohort Compared With the Control Cohort Following COVID-19

Sung Ha Lim, MD; Hyun Jeong Ju, MD, PhD; Ju Hee Han, MD; J

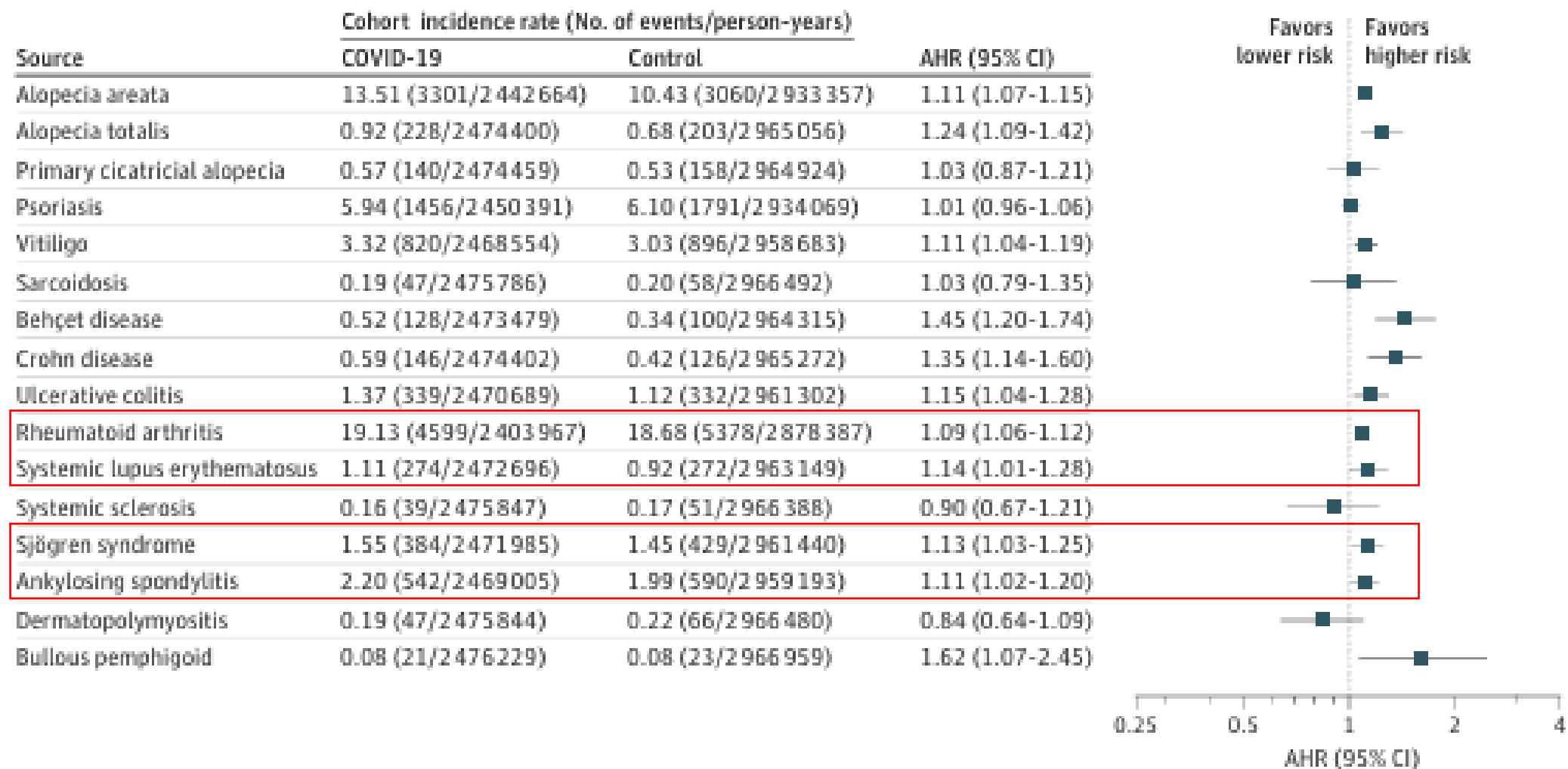
Figure 2. Risks of Incident Autoimmune and Autoinflammatory Disease Outcomes in the COVID-19 Cohort Compared With the Control Cohort

Outcome	Incidence rate, No. events/person-year		aHR (95% CI)
	COVID-19	Control group	
Autoimmune/autoinflammatory disorders			
Alopecia areata	11.79 (135/114 542)	9.48 (1907/2012 295)	1.12 (1.05-1.19)
Alopecia totalis	1.21 (14/116 054)	0.60 (123/2036 903)	1.74 (1.39-2.17)
Psoriasis	5.40 (62/114 856)	5.09 (1025/2013 810)	1.00 (0.91-1.09)
Vitiligo	2.59 (30/115 768)	2.30 (467/2032 049)	1.04 (0.91-1.19)
ANCA-associated vasculitis	0.26 (3/116 137)	0.10 (21/2038 149)	2.76 (1.64-4.65)
Behçet disease	0.34 (4/116 008)	0.38 (78/2036 137)	0.79 (0.56-1.11)
Crohn disease	1.03 (12/116 063)	0.52 (106/2036 833)	1.68 (1.31-2.15)
Ulcerative colitis	1.12 (13/115 873)	1.07 (21/2034 322)	1.04 (0.86-1.26)
Rheumatoid arthritis	16.92 (190/112 321)	15.56 (3068/1971 486)	1.02 (0.97-1.08)
Adult-onset Still disease	0.09 (1/116 137)	0.08 (17/2038 152)	1.18 (0.63-2.23)
Polymyositis	0.09 (1/116 141)	0.10 (21/2038 049)	0.63 (0.30-1.31)
Systemic lupus erythematosus	0.52 (6/115 992)	0.92 (188/2035 386)	0.47 (0.36-0.61)
Systemic sclerosis	0.09 (1/116 119)	0.15 (31/2037 867)	0.99 (0.58-1.69)
Sjögren syndrome	1.29 (15/115 956)	1.53 (312/2034 400)	0.85 (0.71-1.00)
Ankylosing spondylitis	1.99 (23/115 821)	1.86 (379/2032 445)	1.00 (0.87-1.16)
Sarcoidosis	0.26 (3/116 132)	0.14 (29/2037 948)	1.59 (1.00-2.52)
Positive control outcomes			
Myocardial infarction	4.15 (48/115 684)	3.38 (685/2029 628)	1.31 (1.18-1.45)
Congestive heart failure	31.10 (352/113 190)	18.02 (3580/1986 762)	1.60 (1.54-1.68)
Stroke	24.24 (273/112 637)	20.15 (3983/1976 716)	1.28 (1.23-1.34)
Negative control outcomes			
Epidermal cyst	18.45 (211/114 386)	19.99 (4010/2005 922)	0.90 (0.86-0.94)
Tympanic membrane perforation	1.99 (23/115 847)	2.06 (418/2033 487)	0.97 (0.85-1.12)
Trauma of multiple sites	30.47 (346/113 544)	33.65 (6709/1993 987)	0.89 (0.86-0.92)



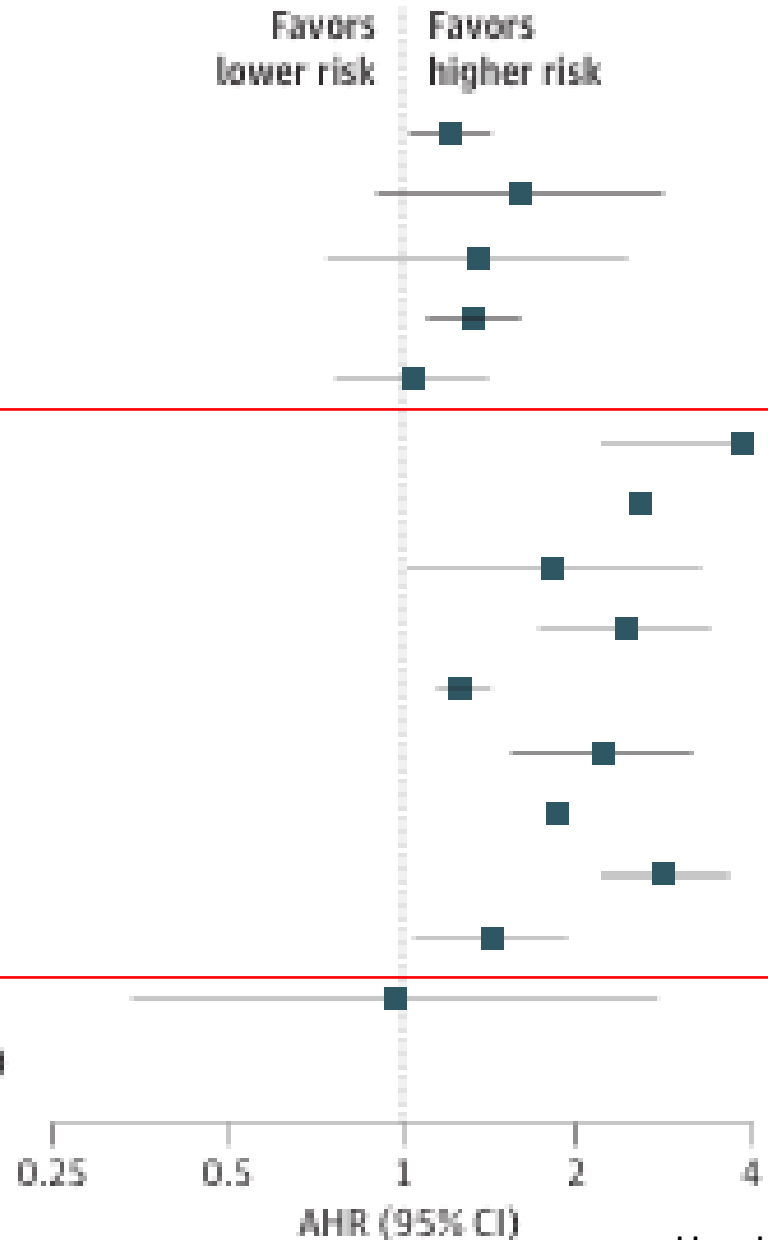
Long-Term Risk of Autoimmune and Autoinflammatory Connective Tissue Disorders Following COVID-19

Figure 2. Comparison of Autoimmune and Autoinflammatory Disease Incidence Risks Between the COVID-19 and Control Cohorts



A ICU Admission

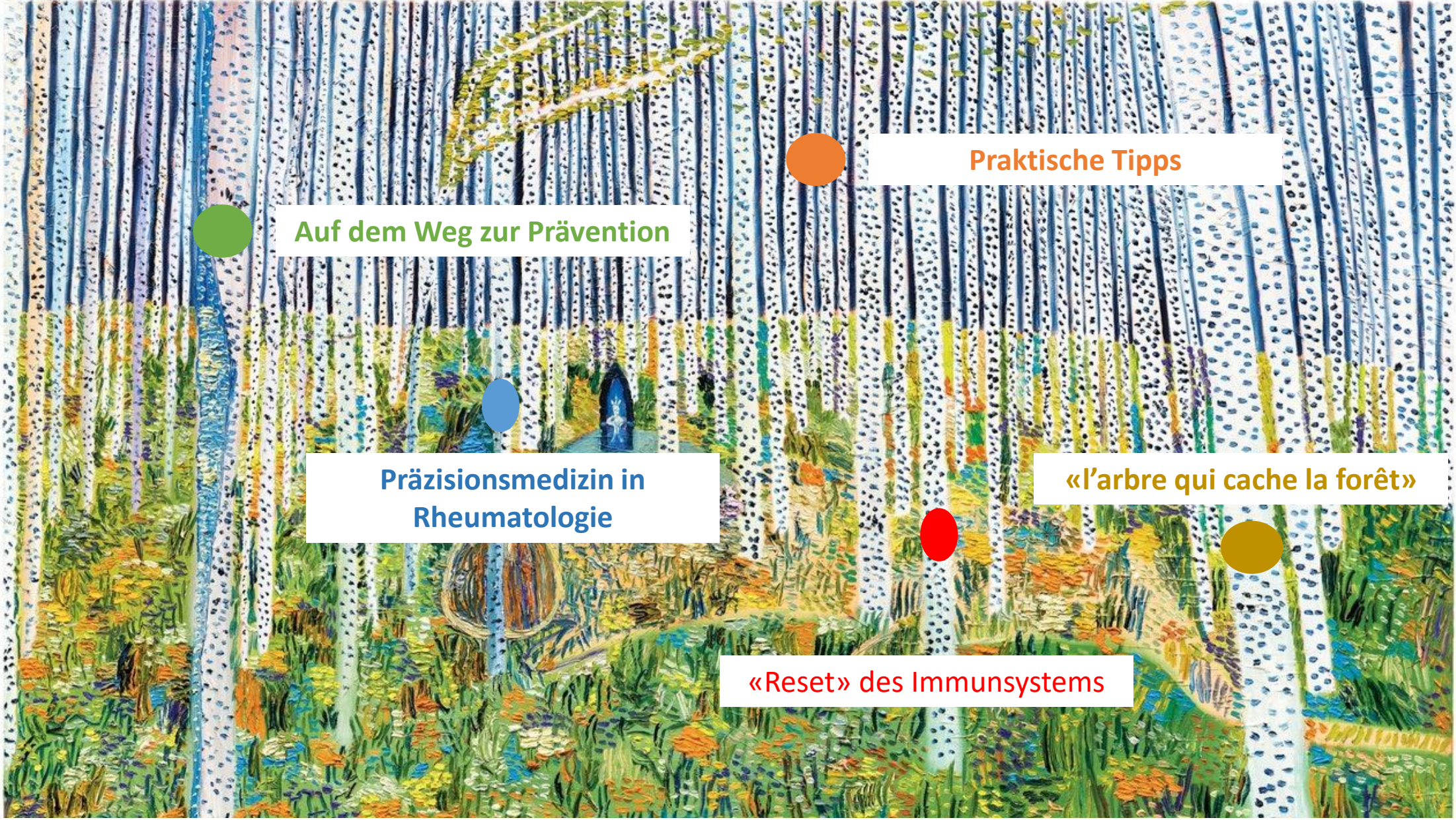
Source	AHR (95% CI)
Alopecia areata	1.21 (1.03-1.43)
Alopecia totalis	1.60 (0.91-2.81)
Primary cicatricial alopecia	1.35 (0.74-2.45)
Psoriasis	1.33 (1.11-1.60)
Vitiligo	1.04 (0.77-1.40)
Sarcoidosis	4.12 (2.28-7.43)
Behçet disease	2.59 (1.53-4.38)
Crohn disease	1.84 (1.03-3.29)
Ulcerative colitis	2.43 (1.74-3.41)
Rheumatoid arthritis	1.27 (1.15-1.41)
Systemic lupus erythematosus	2.22 (1.55-3.16)
Systemic sclerosis	1.87 (0.80-4.36)
Sjögren syndrome	2.85 (2.22-3.66)
Ankylosing spondylitis	1.42 (1.06-1.92)
Dermatopolymyositis	0.97 (0.34-2.75)
Bullous pemphigoid	6.82 (3.59-12.93)



Méfiez-vous de l'arbre qui cache la forêt



Bei einer Verschlechterung der Lungenläsionen einige Monate nach einer COVID-Infektion an eine Autoimmunerkrankung denken



Auf dem Weg zur Prävention



Praktische Tipps



Präzisionsmedizin in
Rheumatologie



«l'arbre qui cache la forêt»

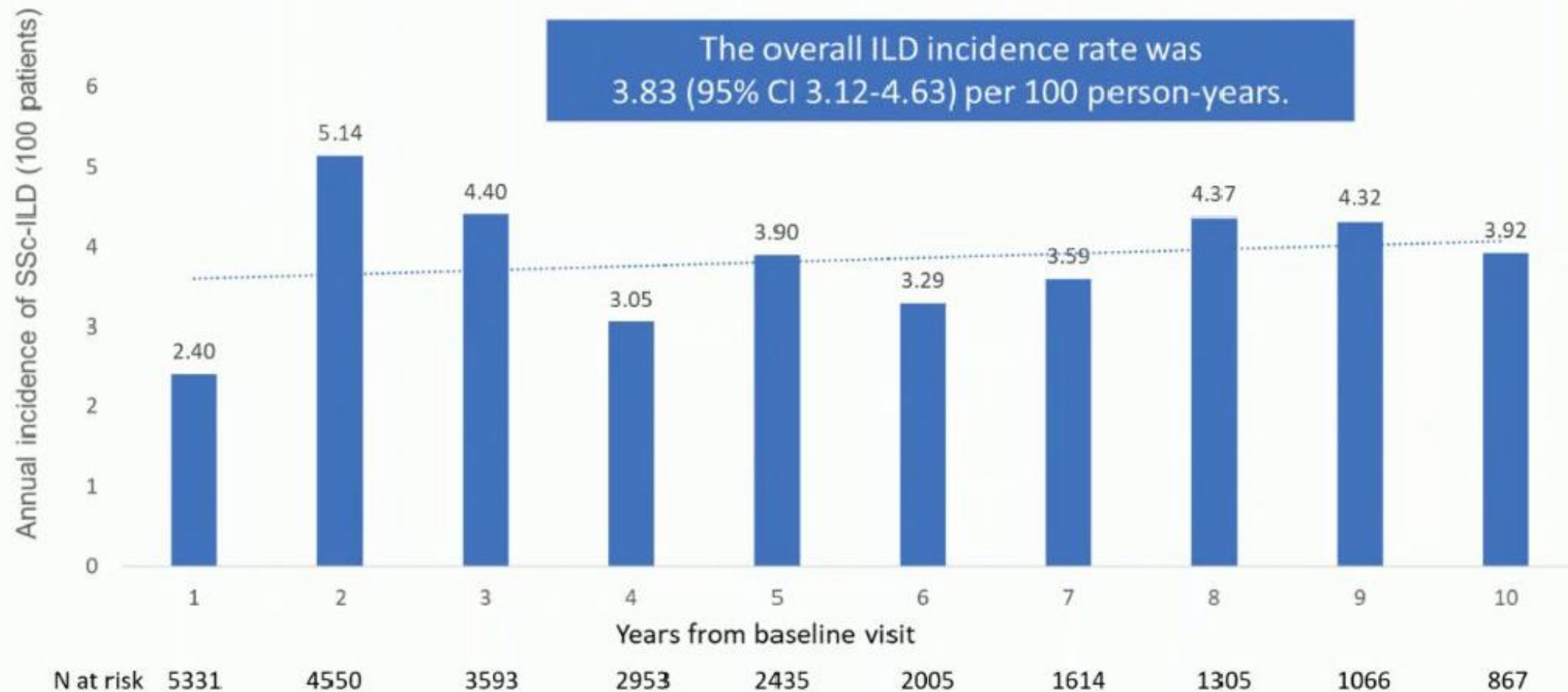


«Reset» des Immunsystems



CT-Assessment bei SSc nicht stoppen

Annual incidence rate of new onset of ILD per 100 patients from the baseline visit





Folsäure bei Unverträglichkeit von MTX nicht erhöhen



RA
Methotrexat-Intoleranz
niedrig dosiertem Folsäure (5-10
mg/Woche)

RCT
zusätzliche Folsäuresupplementierung
von 10 mg/Woche oder Placebo

Methotrexat Intoleranz nach 3 Mt

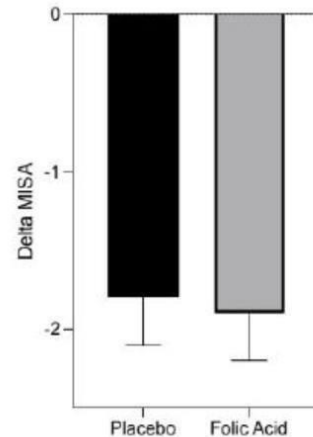


Figure1: Change in MISA score in the two groups.

MISA, Methotrexate intolerance and severity score in adults, validated score for MTX intolerance



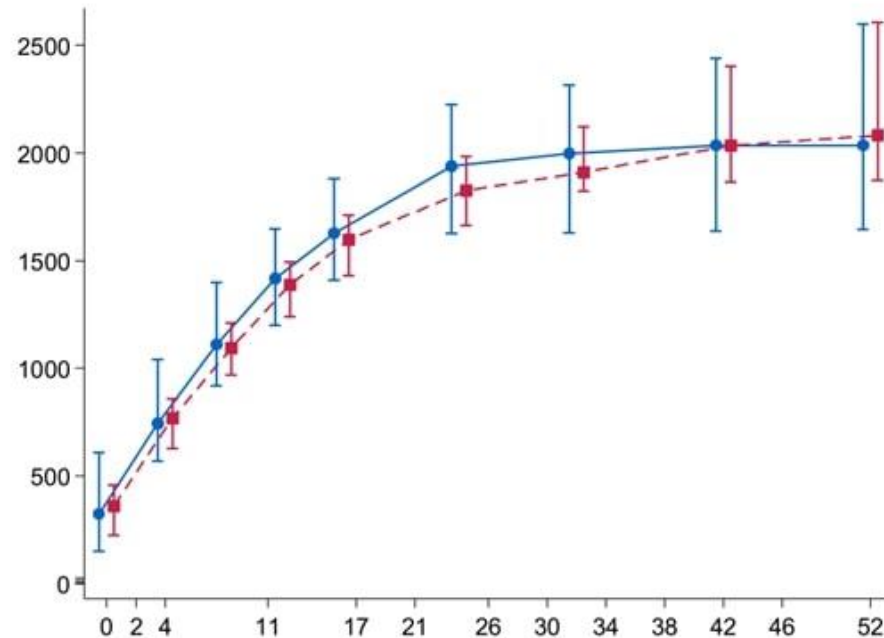
Kein Methotrexat bei Polymyalgia rheumatica



PMR
< 8 Woche
Therapie mit Steroiden

RCT
MTX 25 mg/Woche oder Placebo

Steroide-freie Remission (PMR-
Aktivitäts-Score < 10) nach 52 Wochen



Rot: Placebo (n=28)
Blau: Methotrexate (n=28)



**Vielen Dank für Ihre
Aufmerksamkeit**

